

# AMATEUR

DECEMBER 1991

RRP \$3.25

# R A D I O



THE WIA RADIO AMATEUR'S JOURNAL

# KENWOOD



## DX-ABILITY

Kenwood's TS-450S/TS-690S HF Transceivers Answer the Call

Wherever you are, whatever the situation, you can always count on Kenwood's TS-450S and TS-690S for tough, dependable performance. Products of world-famous Kenwood engineering, these versatile HF transceivers are designed for SSB, CW, AM, FM and FSK modes of operation on all Amateur bands, including the WARC bands. To further enhance capabilities, choose the optional DSP-100 Digital Signal Processor. The AT-450 Automatic Antenna Tuner is built into the TS-450S, and is available as an internal option for the TS-690S. Along with multi-function operation and the highest levels of quality and performance, both models offer yet another advantage: ultra-compact dimensions ideal for DXpeditions and mobile use.

### Enjoy all the advantages of these superior features:

- Superior receiver dynamic range of 108dB
- Kenwood's exclusive AIP (Advanced Intercept Point) system
- General coverage receiver
- Automatic antenna tuner (TS-450S only)
- Inbuilt automatic ATU option (TS-690S only)
- Ultra-compact design
- Excellent split frequency operation
- CW pitch and CW reverse mode selection
- Digital bar meter and multi-function LCD display
- IF shift circuit
- Dual-mode noise blanker (pulse or 'woodpecker')
- 1Hz fine tuning
- 100 memory channels
- 100 watts output on all HF bands
- 50 watts output on 50 to 54 MHz six metre band (TS-690S only)

## TS-450S/TS-690S

HF TRANSCEIVER

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.  
(INCORPORATED IN N.S.W.)

8 Figtree Drive, Australia Centre, Homebush, N.S.W. 2140  
Phone (02) 746 1519, (02) 746 1888, Fax (02) 746 1509  
Call now for further information and the name of your nearest authorised Kenwood dealer.

Kenwood Electronics Australia Pty Ltd only warrants products purchased from their authorised Australian dealers.

Please phone, mail or fax for information

Name.....	Postcode.....
Address.....	Issue.....
Publication.....	Model.....



*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

### EXECUTIVE EDITOR

Bill Rice VK3ABP

### MANAGING EDITOR

Graham Thornton VK3IY

### SENIOR TECHNICAL EDITOR

Peter Gibson VK3AZL

### Technical Editors

David Brownsey VK4AFA  
Don Graham VK6HK  
Evan Jarman VK3ANI  
Peter O'Connor VK4KIP  
Gil Sones VK3AUJ  
Phil Steen VK4APA  
Roy Watkins VK6XV

### DRAFTING

Vicki Griffin VK3BNK

### MARKETING

Bruce Kendall VK3WL  
Norm Eyres VK3ZEP

### ADVERTISING

Brenda Edmonds VK3KT  
June Fox

### BUSINESS MANAGER

Bill Roper VK3ARZ

All contributions and correspondence concerning the content of *Amateur Radio* should be forwarded to:

The Editor  
Amateur Radio  
PO Box 300  
Caulfield South  
Vic 3162

### REGISTERED OFFICE

3/105 Hawthorn Road  
Caulfield North Vic 3161  
Telephone: (03) 528 5982  
Fax: (03) 523 8191

Business hours: 9.30am to 3pm  
weekdays

### Deadlines

	Editorial	Hamads
January	2/12/91	4/12/91
February	13/1/92	15/1/92
March	10/2/92	12/2/92

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA.  
© Wireless Institute of Australia 1991

## CONTENTS

### Technical

Multiplier CW Transmitter for 3.5/7/14MHz	8
Drow Diamond VK3XU	
A Small Helical Antenna for Two Metres	18
Ian Glanville VK3AQU	
Quad Loop for HF Use	17
Adrian Felt VK2DZF	
Getting Started with Amateur Radio Satellites (10)	20
Bill Magnusson VK3JT	
Survival Radio — Try This	20
J A Heath VK2DVH	
'Not a High Tech' Heading Finder	21
Bryan Bailey VK5BFB	
More About Modulation (Technical Correspondence)	21
Robert McGregor VK3XZ	
Yaesu MD-1C8 Microphone — Mini Equipment Review	22
Ron Fisher VK3OCM	
Morse Program Comparison — Product Review	23
Graham Thornton VK3IY	

### General

President's Christmas Message	4
Report on IARU Region III Conference — Bandung Oct 1991	25
Repeater Linking Standards — Interim Guidelines	27
A Centurion Among Us	32
David Jones VK4KLV	
From Russia with Love	33
John Mahoney VK4JON	
Surprise Party for Pierce Healy VK2APC	34
Sid Ward VK2SW	
Radiohess	36
Vincent Luciani K2VJ	

### Book Reviews

'On Ultra Active Service'	34
Jim Payne VK3AZT	
'The Magic Spark'	35
Colin MacKinnon VK2DYM	
'The Antenna Experimenter's Guide'	61
Evan Jarman VK3ANI	

### Operating

Awards	40
Contests	
Calendar, 15th WA 80m Contest Results	41
Japan International DX Contest Rules	41
1991-2 Hoes Huf Contest Rules	42
VHF/UHF Field Day 1991 Rules	42

### Columns

Advertisers' Index	64	Intruder Watch	54
ALARA	46	Knutshell Knowledge	54
AMSAT	46	Morseword No 57	59
Club Corner	58	Over To You — Members' Opinions	58
Divisional Notes		Pounding Brass	53
VK2 Notes, VK3 Notes	56	Repeater Link	51
5th Wave	57	Silent Keys — Obituaries	60
VK6 Notes	58	Spotlight on SWLing	52
Editor's Comment	2	Stolen Equipment	63
Education Notes	47	VHF/UHF — An Expanding World	43
FTAC Notes	45	WIA Directory	2, 3
Hamads	62	WIA News	3
How's DX	48	WIA Slow Morse Transmissions	64

### Cover

Our cover this month depicts Harry Angel VK4HA. Harry, who is still an active amateur, has his 100th birthday on 14 December. Are there any other active amateurs on earth of this age or is Harry in a "Century Club" of his own? For his profile, see "A Centurion Among Us" on page 32. Photo: David Jones VK4KLV.

## EDITOR'S COMMENT

BILL RICE VK3ABP EXECUTIVE EDITOR

### Quart Into a Pint Pot

I defy anyone to produce a metric version of the above title with anything even approaching the same impact. "Litre into a half-litre etc" just doesn't seem to mean the same. In our case it means the task which faces Graham and me on what is usually the first Monday of every month (but sometimes the second), when we have to decide what material is to go into the next issue.

We thought many of you who support the WIA by sending in articles, letters, news items and so on might like to know the factors which determine how long before you will see it in print. Regular columnists are different. In exchange for the chore of having to put together a column each

month they have the privilege of knowing when it will appear. Letters usually will get into "Over to You" within the month (unless they're too long or might stir up a hornets' nest, as discussed last month). But articles, either technical or of general interest, are usually a problem.

Technical articles usually require drawings. Few authors are competent as draftspeople. Those who are are doubly welcome, but most have to be sent out to Vicki (the drawings, of course, not the authors!).

All technical articles are carefully edited, perhaps even modified, to ensure they don't conflict too violently with the laws of physics. All this takes time, and when space is hard to find it can be six months or

more before the article is printed; so please don't lose heart in the meantime.

General interest articles introduce another problem: topicality. Unless printed within a month or two of the event described, they become "stale". But there are already 20 or so articles waiting in the queue, and we can only fit in perhaps four or five each month. Which ones make it and which do not?

No matter what we poor editors do, someone is going to be upset. The only hope is to find more space. How? More pages? Only if there's enough advertising to pay for them (one page of advertising pays for about three pages of normal copy). Smaller type? We've been through that before. As is, most readers have no reading problem. Smaller, and the complaints start coming in. And, for good technical reasons, we can't just add one or two extra pages. We have to

go from 56 to 64 in one jump. This month, as a Christmas bonus, we can do it, but it may be several months before we can do it again. Patience, please, people!

Finally, just to complicate our lives still further, all these factors vary cyclically. We are short of material; appeal for articles; you all respond magnificently; now there's too much! Delay, some authors disgruntled, stop writing; material runs low; back to square one! Typical period of the cycle seems to be about two years. In more ways than one, our fate is in your hands! And it's much better to have surplus articles, as at present, rather than not enough.

So, on that happy note, let's desist from all these complaints. Thank you all very much indeed for all your support through the year. May you all have a very merry Christmas and a happy 1992. ar

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

## Wireless Institute of Australia

The world's first and oldest National Radio Society — Founded 1910

Representing the Australian Amateur Radio Service — Member of the International Amateur Radio Union

Registered Executive Office of the WIA: 3/105 Hawthorn Road, Caulfield North, Vic 3161

All mail to: **PO Box 300, Caulfield South, Vic 3162**. Telephone: (03) 528 5962

Fax: (03) 523 8191

Business Hours: 9.30am to 3.00pm on weekdays

**General Manager and Secretary: Bill Roper VK3ARZ**

### EXECUTIVE

**President:** Peter Gamble VK3YRP  
**Vice Chairman:** Ron Henderson VK1IRH  
Roger Harrison VK2ZTB  
Kevin Olds VK1OK  
Bill Rice VK3ABP  
**Immediate Past President:** David Wardlaw VK3ADW  
**Honorary Legal Counsel:** George Brzostowski VK1GB

**VK1 Federal Councillor:** Rob Apathy VK1KRA  
**VK2 Federal Councillor:** Terry Ryeland VK2UX  
**VK3 Federal Councillor:** Peter Maclellan VK3BWD  
**VK4 Federal Councillor:** Murray Kelly VK4AOK  
**VK5 Federal Councillor:** Bill Wardrop VK5AWM  
**VK6 Federal Councillor:** Neil Penfold VK6NE  
**VK7 Federal Councillor:** Joe Gelston VK7JG

### FEDERAL CO-ORDINATORS

**Amsat:** Graham Ratcliff VK5AGR  
**Awards:** John Kelleher VK3DP  
**Contest Manager:** Neil Penfold VK6NE  
**Education:** Brenda Edmonds VK3KT  
**EMC:** Hans Ruckert VK2AOU  
**Historian:** John Edmonds VK3AFU  
**Intruder Watch:** Gordon Loveday VK4KAL

**Int'l Travel Host Exch:** Ash Nallawalla VK3CIT  
**QSL Manager (VK3, VK0):** Neil Penfold VK6NE  
**FTAC:** John Martin VK3ZJC  
**Federal Tapes:** Ron Fisher VK3OM  
**Standards:** Roger Harrison VK2ZTB  
**Videotape:** John Ingham VK5KG  
**WICEN:** Leigh Baker VK3TP

# WIA NEWS

FROM THE WIA EXECUTIVE OFFICE

## Quarterly Federal Meetings

The weekend of 26th - 27th October was the time for another of the regularly quarterly meetings of the WIA Federal Council and Executive. These weekends follow a fairly standard pattern. The idea is to have the complete Federal Council and Executive present for the two days to allow full discussion of matters that have arisen during the previous three months, progress reports on extended projects and consideration of future policy and planning.

As members know from the list published on page 2 of each issue of Amateur Radio magazine, each Division appoints a Federal Councillor who is the Division's representative on the WIA Federal Council, the governing body of the WIA. Each Federal Councillor also becomes a member of the Executive, the body charged with carrying out the policy and directions of the Council. In addition to the seven Federal Councillors, the Executive includes five other members and the WIA Federal President.

Between quarterly meetings, the small group of Ex-

ecutive members located in Melbourne keeps the machinery going and deals with the day-to-day administration of Federal affairs.

If there are WIA policy motions received on notice from Divisions, or policy recommendations come from the proceedings of the Executive deliberations, an Extra-ordinary Federal Council convention is convened to allow the Council to consider this business. What this means is that there are usually two meetings scheduled for the week-end. First of all the Executive meeting, at which all members of Executive may vote, and the Federal Convention, at which only the Federal Councillors vote as representatives of their Divisions.

In addition, at the last two

weekend meetings, the Federal Councillors have taken the opportunity to have a short informal group discussion, without the Federal President, or non-Federal Council members of the Executive, present in order to compare Divisional views on current or future agenda items. This informal meeting is also attended by those Divisional Alternate Federal Councillors who are present for the weekend proceedings.

The meeting procedure follows a fairly standard pattern. After dealing with the minutes of the previous meeting time is allocated for reports from the Executive members on any specific individual activities and from the General Manager on matters relating to the operation of the

## WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers	Weekly News Broadcasts	1992 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Christopher Davis VK1DO Secretary Jan Burrell VK1BR Treasurer Ken Ray VK1KEN	3.570MHz 2m ch 6950 Rebroadcast Mondays 8pm 70cm ch 8525 2000 hrs Sun	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram St Parramatta NSW (PO B or 1066) Parramatta 2124 Phone (02) 889 2417 Fax (02) 633 1525	President Roger Henley VK2ZGJ Secretary Bob Lloyd-Jones VK2YEL Treasurer Bob Taylor VK2AOE (Office hours Mon-Fri 1100-1400 Wed 1900-2100)	From VK2WJ at 1045 and 1915 on Sunday on the following frequencies and modes: (1045 only): 1.845 AM; 3.595 AM morning and SSB evening; 7.146 AM; 10.125 SSB; On relay 14.160 SSB and 21.170 SSB; 28.320 SSB; 52.120 SSB; 52.525 FM; 144.120 SSB; 147.000 FM; 38.525 FM; On relay 584.750 ATV sound; 1281.750 FM. Plus automatic relays to 2m repeaters surrounding Sydney and manuals to several county repeaters. News headlines by phone (02) 552 5188	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 400 Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9281	President Jim Linton VK3PC Secretary Barry Wilton VK3CV Treasurer Rob Healey VK3XLZ Office hours 0630-1530 Tue & Thur	1.840MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon, 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Murrumbidgee, 146.700 FM(R) Mt Dandenong 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	(F) \$72.00 (G) (S) \$57.50 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President John Aarnse VK4QA Secretary Bob Leese VK4EER Treasurer Eric Fillock VK4NEF	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400, 147.000 FM(R) Mt Saddleback 148.725 FM(R) Mt Barker Broadcast repeated on 3.550 at 1930 hrs	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK5	South Australian Division 34 West Thorburn Rd Thorburn SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Rowland Bruce VK5OU Secretary John McKellar VK5BUM Treasurer Bill Wardrop VK5AWM	1.820MHz 3.550MHz, 7.095, 14.175, 28.470, 53.100, 145.000, 147.000 FM(R) Adelaide, 146.700 FM(R) Mt Dandenong, 146.900 FM(R) South East, 147.250 FM(R) Mt Saddleback 148.725 FM(R) Mt Barker Broadcast repeated on 3.550 at 1930 hrs	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 388 3888	President Cliff Bastin VK6LZ Secretary John Farnham VK6AFA Treasurer Bruce Hedland-Thomas VK6OO	146.700 FM(R) Perth, at 0630 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525MHz County relays 3582, 147.350(F) Busseton 146.900(F) Mt William (Bunbury) 147.225(F) 147.250(F) Mt Saddleback 148.725(F) Albany 148.825(F) Mt Barker Broadcast repeated on 3.550 at 1930 hrs	(F) \$60.75 (G) (S) \$48.00 (X) \$32.75
VK7	Tasmanian Division 148 Denwent Ave Lindisfarne Tas 7015	President Tom Allen VK7AL Secretary Ted Beard VK7EB Treasurer Peter King VK7ZPK	146.700MHz FM (VK7PHI) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7PHN), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$67.00 (G) (S) \$53.85 (X) \$39.00
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times

Note: All times are local. All frequencies MHz.

# The President's Christmas Message

Everywhere we look these days we see the effects of change and uncertainty. It would seem the only thing we can say with any certainty is the rate of change is accelerating. There are many changes that are currently affecting our hobby — let us think about some of them.

Firstly, the major changes in the examination system — the second of such changes in the space of a couple of years. Hopefully, the department will be able to leave the current arrangements in place for quite a few years, and things will settle down again. Secondly, take a browse through the advertising pages of AR and, as you do, think what things were like a few years back — perhaps the most noticeable is the replacement of analogue displays with digital readouts. Look also at the options that are now available — what was a "special extra" a few years ago is now a standard item.

So, what can we conclude from this? I would like to suggest a couple of things. First, change is sometimes difficult and painful, but this does not mean it is a bad thing — only that the new process may take us a little while to adjust to it. During this time there is often the need for some fine tuning — feedback from the users that will improve the process. Second, the changes can bring us benefits and make life easier.

Where does that leave us? Well, we can take the easy way out. We can get through life without ever expressing an opinion, without ever generating a new thought. We can accept the benefits and never seek a new challenge. In other words, we can stay in our "comfort zone", as the sociologists like to call it.

Or we can follow in the tradition of the amateur service. If those first amateurs had never painstakingly set up the tests necessary to test the ability of "short waves" to communicate around the world, then where would we be? If succeeding generations of amateurs had not done their bit to push back the frontiers and, in so doing move, out of their comfort zones, then amateur radio — and indeed radio technology as a whole — might still be a pale shadow of what it is today.

This is all very well as a piece of philosophy, but what does it do for us here and now? Well, there are lots of ways of pushing back the frontiers. Some frontiers are technical, and we have many very capable amateurs in our ranks who are doing just that. Some of the frontiers are administrative, and here we are

fortunate to have many amateurs who have assisted in preparing papers for the recently held IARU Region 3 Conference. It is a tribute to their ability that many of these papers were accepted with minimal changes. Of particular importance here was the paper "Australian Guidelines for Packet Radio Operation". Some of the frontiers are regulatory, and it is clear from government activities in other related areas (eg telecommunications) that policies are being formulated on the deregulation of the radio spectrum. Again, the "crystal ball gazers" in our ranks are doing their best to formulate ideas on how we should react to such proposals.

So what part can an individual radio amateur play? By looking at the hobby with his or her own eyes and skills and then deciding which part of the frontier can be pushed back. How to do this? Easy! Don't stay in your comfort zone — participate in your local club or special interest group activities. Participate in your WIA Division's activities. And, most important of all, participate in the usage of the radio spectrum — after all, that was why we all got our licences in the first place, wasn't it? But in all these things, try to move out of your comfort zone. As you relax over the Christmas break, think of something new you can do for the hobby of amateur radio in 1992! Perhaps you could look on it as a way of "repaying" the enjoyment you have had from the hobby.

On behalf of the Federal Council, the Federal Executive and the General Manager and staff of the Federal Office, I would like to wish you and your families the compliments of the season, and may 1992 be a challenging year for you!

PETER GAMBLE VK3YRP  
FEDERAL PRESIDENT  
BT

**GAMBLE** (Sessions). — Lea and Peter proudly announce the arrival of their son:

Matthew William  
(3.9kg-8lb 10oz) on 30 Sept 1991 at St George's Hospital, Kew. Mother and son both doing well.

Executive Office. Inspection and discussion of the financial reports and recruiting statistics for the past months generally take some time. Inspection of the list of non-routine correspondence generally allows a number of items to be deleted as completed as members of the Executive, the President, or the General Manager report on the action that has been taken. All other incomplete business, such as motions to Council, resolutions of Executive or DoTC action items are inspected and progress is reported, so completing the routine part of the meeting

and leaving the remaining time for the major items on the agenda.

The Saturday evening is usually devoted to a meal followed by informal discussion of future agenda items or matters affecting the WIA or the Executive. No votes are taken, and no records kept, but this session allows any member to introduce a topic that may not have been raised otherwise, or to air views or grievances. It is noticeable that these sessions are becoming still less formal, but more productive.

The agendas for these most recent quarterly meetings

were unusually extensive because of the need for consideration of the Federal budget for 1992, and the determination of the Federal component of the membership subscription, in addition to the presentation of reports from a number of sub-committees charged with specific tasks.

## Executive Meeting

Following are some of the items discussed at the Executive Meeting:

## WARC 92

David Wardlaw reported on the current status of the Aus-

tralian preparation for this major event. The last of the Australian Preparatory Group meetings has been held, although there are still some CCIR and Delegation meetings to be attended.

After extensive discussion on the merits, financial aspects, and implications of the WIA sending two delegates to Torremolinos in February for the WARC 92, it was eventually resolved that policy should be to recommend two persons to attend, this to be reduced to one only if that should become necessary for any reason. The two delegates to represent Australian radio amateur

service will be David Wardlaw VK3ADW and Ron Henderson VK1RH.

## Region 3 IARU Conference Report

Ron Henderson, as leader of the WIA delegation to the IARU Region 3 Conference in Bandung in October this year, tabled a report of the group's activities. Members of the delegation participated in both general and small-group events. Amongst other things, input was provided on packet protocol (the Australian guidelines were adopted as the Region 3 Guidelines almost unaltered - see elsewhere in this WIANEWS), band planning, band allocations, and direction-finding.

All of the four WIA delegates who attended felt that it had been worthwhile, and returned with many post Conference tasks to complete. A full report of the Conference will be published shortly.

## 50 MHz Beacon Policy

A report and recommendations from John Martin VK3ZJC, the Federal Technical Advisory Committee (FTAC) co-ordinator, on the policies to apply to frequencies and locations of the 6 metre beacons was received and discussed in detail before being recommended for adoption by the Federal Council. The final document differed very little from the details published on page 48 of the October 1991 issue of Amateur Radio magazine.

## Examinations

The meeting studied the report on the WIA Exam Service presented by the General Manager. In accepting the report the Executive noted its appreciation of the time, energy and effort expended by the General Manager in achieving a functioning examination system in such a short time. Although at this stage costing can only be done on estimates based on limited

information, preliminary calculations indicate that the setting up costs should be recovered within the specified three year period, and the WIA Exam Service should be self-funding. The opportunity was taken to ensure that all attending the meeting were fully informed as to the functions and responsibilities of the WIA Exam Service.

In addition the Executive approved the formation of a Committee to be responsible for review and expansion of the examination question banks.

## Revision of DoTC Licence Conditions

As a response to discussions with the Licensing Section of DoTC in Canberra, the WIA has been considering ways in which further deregulation of the Amateur Service could be achieved. Two papers relating to deregulation were presented. John Martin VK3ZJC, the WIA FTAC Co-ordinator, after conferring with the Divisional TACs and repeater user groups, recommended a streamlining of the regulations concerned with repeaters, beacons, packet and RTTY.

Kevin Olds VK1OK, as chairman of a sub-committee examining the DoTC regulations brochures, recommended further reductions in the regulations relating to repeaters, beacons, packet and RTTY, as well as to club stations, and station identification.

Both reports were accepted by Executive and will form the basis of submissions to the DoTC.

## WIA Objectives for 1992-3

A paper tabled by Ron Henderson VK1RH, opened discussion on the goals and objectives of the WIA for the immediate future. The paper grouped the activities of the WIA Federal body into the major fields of Publications, Executive Office, and Inter-

national Representation. Although in most of the field subdivisions the objectives were mainly to continue or upgrade the current activities, it was felt that such a consideration of the range of activities of the Federal Body is necessary to ensure that some activities are not being neglected by over-emphasis on other activities.

## 1992 Federal Budget

Divisions were notified at the Annual Federal Convention held in April 1991 that the Federal budget for 1992 would be set at the October meeting, and were asked for input.

This topic is always contentious, as Divisional views vary considerably. While the idea of uniform membership fees for all Divisions has been advocated for several years, it has become increasingly apparent that this goal will not be achieved in the short term, as the services provided by the Divisions also vary greatly.

Keeping in mind the current state of the national economy, the Divisions agreed that increases in the subscriptions should be minimised, resulting in an overall increase of less than the CPI increase. It is not, of course, possible to avoid some increase, as so many of the costs of service to members are not under the control of the WIA. In addition, the threat of Australia Post to substantially modify or abolish the Category B postal rate must be considered, as this action could double the cost of mailing Amateur Radio magazine to members.

Full details of the 1992 membership fees appear in the right hand column of the WIA Divisions directory appearing on page 3 of this issue of Amateur Radio magazine. Members will note that the slight increases are all below CPI, clearly indicating the continuing high level of financial management practised by

the WIA.

4266 members will receive membership renewal notices in the post early in December.

Please renew your membership promptly by cheque or credit card. If renewing by authorising the WIA to debit your plastic card, please carefully check the credit card numbers when you write them on the membership renewal slip, and ensure that you have signed the authority before posting it to the WIA Executive Office.

Incidentally, receipts are not issued for membership renewals unless your remittance is accompanied by a request for a receipt and a stamped, self-addressed envelope.

## Options for Publication of Amateur Radio

In response to extensive discussions at a number of meetings, Ron Henderson tabled a short paper summarising the possible options for the future of Amateur Radio magazine. The meeting agreed that the idea of merging the magazine with a commercial electronics magazine is not feasible from an economic viewpoint, nor would it be in the interest of members, but accepted that there is room for upgrading the standard of the present magazine. Roger Harrison was charged with researching a range of possible options and will report back on costs and feasibility at the next quarterly meeting.

## Shutdown of Repeaters

Peter Maclellan VK3BWD, tabled a paper recommending guidelines for determining the circumstances under which repeaters should be shut down. After discussion, the paper was accepted (see full details elsewhere in WIANEWS).

## EXTRA-ORDINARY FEDERAL CONVENTION

This quarterly meeting of the Federal Council was the busiest for quite some time. Matters of policy decided, in addition to those items mentioned above as Executive recommendations to Federal Council, included:

### Repeater Linking Standards

The Federal Council adopted the repeater linking standards (as circulated at the 1991 Federal Convention by the VK4 Division) as a set of interim guidelines. The full guidelines are published elsewhere in this issue of Amateur Radio magazine, and will be reviewed at the 1992 Annual Federal Convention.

### WIA Federal Structure

After considerable discussion, the Federal Council passed several motions which directed that no further efforts and resources be expended in pursuit of a national model for the WIA, that consideration of an additional, Commonwealth Division be abandoned, and that the roles of the Federal Council and Executive be reviewed.

### Reciprocal Licensing with Spain

Notification has been received from the DoTC that the Australian Embassy in Madrid has finalised the Reciprocal Radio Amateur Licensing Arrangement with Spain, to take effect from 60 days after the 3rd October 1991.

Australian licensees holding AOC, AOC or NAOC will be entitled to Grade A,

Grade B or Grade C licences respectively. Of course, the Spanish regulations must be observed when operating in Spain.

This reciprocal licensing arrangement took over six years to put in place, and is an example of the protracted diplomatic negotiations that are often necessary in these matters.

### Executive Office on Air

Through the generosity of Kenwood Electronics Australia Pty Ltd, and Mr Joshua Mui, the Federal Body of the WIA has recently been presented with a TM-231A 2 metre transceiver for use in the Executive Office. When a suitable power supply is arranged, the set will be ready for use.

Let me hasten to assure members that this does not mean that the office staff will be spending their days on the repeaters, or that 2 metres will supersede the regular communications channels of telephone, fax and mail.

The WIA wishes to record its thanks for Kenwood's donation.

### Packet Radio Guidelines

The WIA submitted a draft proposal for packet radio guidelines to the recent IARU Region III triennial conference in Indonesia. This proposal was adopted by Region III, and delegates from the other regions showed great interest.

At the October meeting of the WIA Federal Council these packet radio guidelines were formally adopted as the Australian Packet Radio Guidelines. Here they are:

**Guidelines for Packet Radio Operators**  
1. Amateur radio takes pride in being self-regulated. Packet Radio Operators should continue this tradition.

2. Packet Radio Operators, like all Amateur radio Operators, should observe published Band Plans.
3. A Packet Radio Operator should not send the following traffic, either direct or via mail boxes:
  - a. All advertising for selling, buying or trading goods, including amateur equipment (except if permitted by local regulations);
  - b. All statements on propaganda or political or religious subjects;
  - c. All inappropriate language, as, for instance, the use of swear words, obscenities, defamatory or libellous language etc;
  - d. All material which may infringe copyright; and
  - e. All material which infringes privacy, whether personal or corporate.
4. A Packet Radio Operator using a BBS should avoid transmitting unnecessary or redundant messages and documents, in order to enhance network efficiency.
5. A Packet Radio Operator utilising a BBS should ensure that the call sign of the originating station, including the name of the person responsible in the case of a club station, is clearly shown on every message so the sender can be identified.
6. A packet Radio Operator should avoid messages that are too long for efficient relay through the network.
7. A Packet Radio Operator utilising a BBS should ensure that all messages transmitted are addressed to the appropriate group of recipients and not addressed to inappropriate areas in order to enhance network efficiency.

#### Guidelines for Packet Radio Bulletin Board Operators

1. The Operator of a Packet Radio Bulletin Board is obliged to provide a reliable service, within a defined area for a defined purpose.
2. A Packet Radio Bulletin Board operator is morally responsible for all messages

forwarded by his system. He should make his best efforts to ensure that the traffic forwarded is appropriate to the Amateur Radio Service and in accordance with the Guidelines for Packet Radio Operators.

3. HF Mailboxes should only be used where there is a genuine need that cannot be provided by VHF or other means.
4. A Packet Radio Bulletin Board Operator may take action to exclude a User who persistently contravenes Guidelines for Packet Radio Operators. Excluding a User should only be done as a last resort after the User has been warned and where exclusion does not contravene local regulations.

### Allocation of VK9 Amateur Callsigns

The WIA has received a copy of the recently updated guidelines established by the DoTC for the issue of VK9 callsigns. These guidelines should now clarify the position, and please a number of amateurs who have been lobbying for a return to a geographic pattern of issue.

The allocation of VK9 callsigns is no longer handled by the DoTC computer. In order to satisfy the requirements of the amateur service, the issuing of all VK9 callsigns has to be done manually at each DoTC office. The system is listed in the accompanying table.

### Shutdown of Repeaters

At the meeting of the WIA Executive held over the weekend of 26th and 27th October 1991, it was resolved that the Executive, noting:

- a. that the licensee of a repeater is responsible for its operation; and
- b. the WIA Voice Repeater Guidelines (see below)

**RECOMMENDS** that the repeater licensee shut down



the repeater in the event that:

1. continued operation is or will be in breach of DeTC regulations;
2. operation will lead to a breach of agreements or interference to the service of organisations or individuals participating in the installation or site; and
3. there has been, and it appears likely there will be, persistent or wilful operation in contravention of repeater voice or packet operation guidelines.

## Voice Repeater Guidelines

### Purpose of Repeaters:

Repeaters are established primarily to extend communication range of mobile stations in the VHF and UHF bands. However, they may also be used as calling channels for initial contact before switching to a simplex frequency. As well, they provide contact facilities for radio amateurs in remote locations where simplex communication is not normally possible.

### Operating Conventions:

Each transmission should not exceed 2 minutes. Repeaters have timers to limit transmission length.

Before replying, let the repeater "drop out" and wait at least 3 seconds before transmitting. This allows others immediate access (see #).

Do not reset the timer to extend your own transmission time.

Keep contacts brief and to the point. If you have nothing to say, don't say it! Limit your group QSO to a maximum of 10 minutes.

Avoid over-use of callsigns. They are required at the start and end of a contact, and at least once every 10 minutes. But callsigns can be dropped from the start and end of transmission during a contact. Phonetics are also over-used on repeaters, particularly in callsigns.

#To gain access to a repeater which is being used by others, simply announce your callsign during the pause between others.

#If using a repeater and

VK9 CALLSIGN TEMPLATE				
Territory	Unrestricted	Limited	Combined	Novice
Christmas Is	VK9Ka	VK9ZKa	VK9HGa	VK9NOGa
Cocos Is	VK9Ca	VK9ZCa	VK9HGa	VK9NGa
Lord Howe Is	VK9La	VK9ZLa	VK9HLa	VK9NLa
Melish Reef	VK9Ma	VK9ZMa	VK9HMa	VK9NMa
Norfolk Is	VK9Na	VK9ZNa	VK9HNa	VK9NNa
Wills Is	VK9Wa	VK9ZWa	VK9HWa	VK9NWWa

Note: 'a' represents any letter of the alphabet a to z

another station announces its callsign during the pause, let that station go ahead immediately. He or she may have an urgent message.

Do not transmit on repeater output frequencies. Use reverse facilities only to observe another station's input signal strength. If satisfactory, then QSY to a simplex channel.

Ignore annoying transmissions. Do not respond or comment on a transmission not identified by callsign.

There is no need to call CQ on repeaters. Just announce your callsign and say you are listening on the frequency.

The use of repeaters for liaison to establish a contact on another band is permissible, but cross-band contacts using a repeater are not encouraged. Where cross-band contacts are made all frequencies must be announced by all parties.

Priority must be given to normal repeater usage.

### Summary:

Be courteous and unselfish at all times, and always be aware of the needs of other people who have an equal right to share the repeater.

If you hear someone new to repeater operation, assist and educate them in a courteous manner.

Remember others, including new and potential radio amateurs, monitor repeaters - the image of Amateur Radio is important.

### International Representation Fund

Donations to this important fund received since the last acknowledgment include

those from:

Mackay Amateur Radio Association (Inc);  
RAAF Williams Amateur Radio Club; and  
Quantas Amateur Radio Club.

The WIA thanks all these contributors. The demands on this fund are very high at present with the recently concluded IARU Region III conference in Indonesia and the WARC coming up in February next year in Spain. All donations are gratefully acknowledged by the WIA in the continuing fight to retain our amateur service privileges.

## Delivery of Amateur Radio

There were some problems with the delivery of the November issue of the WIA magazine. The machine used by the mailing house to insert the address fly sheets in each copy of the magazine obviously had some hiccups and a number of members found, to their surprise, that there was another member's address fly sheet enclosed with their copy of the magazine.

The WIA would like to thank those members who notified the Executive Office when they received another member's address label with their own. A complaint has been lodged with the mailing house and we are assured the problem will not occur again.

However, if you do get another member's address label inside the magazine packaging, please let the Executive Office know as soon as possible so that the member

whose label it is will not miss out on a copy of Amateur Radio magazine.

## 3-Year WIA Membership

Each year an increasing number of WIA members are realising the advantages of renewing their membership for three years. Unless you are a student member, or are not resident in Australia, why not try it?

All you have to do is forward a remittance for an amount equal to three times the renewal amount shown on the membership renewal notice. Then you will not be affected by the inevitable fee increases for the next two years.

## End of 1991

Well, that's WIANEWS for 1991. I trust the column has gone some way along the track of keeping members informed of what was happening in the federal arena of the WIA.

I would particularly like to thank Brenda Edmonds VK3KT for her invaluable assistance in producing WIANEWS during 1991, and also Ron Henderson VK1RH.

On behalf of all the crew at the Executive Office I wish you all a very happy and enjoyable Christmas, and a safe and prosperous 1992.

BILL ROPER VK3ARZ

ar

**Prevent  
pirates -  
make sure  
you sell  
your  
transmitter  
to a  
licensed  
amateur**

# MULTIPLIER CW TRANSMITTER FOR 3.5/7/14MHz

DREW DIAMOND VK3XU  
NAR MEIAN, GATTERS RD.  
WONGA PARK VIC 3115

**A** NUMBER OF ENTHUSIASTS have written suggesting the following project: a relatively simple CW transmitter or exciter to cover three popular HF bands, with VFO control, providing about 2-4W output power without fancy parts. Here is an answer to those valued requests. I hope you like it.

## Performance

- Frequency Range:** 3.5 to 3.58MHz, 7.0 to 7.16MHz and 14.0 to 14.32MHz.  
**Output Power:** Nominally 2W, typically 4W into 50 ohms.  
**Unwanted Products:** All products are harmonically related, and at least -43dBc, typically -50dBc.  
**Frequency Stability:** In the order of 60Hz/10min. on 14MHz after 30min. warm-up.  
**CW Keying:** At least 70dB, no click or chirp.  
**Load Tolerance:** Will withstand any SWR, including short and open circuit without damage.  
**Supply:** Nominally 12-13.8Vdc at up to 1A.

## Equipment Required

High impedance voltmeter and RF probe, 50ohm dummy load, transistor gain tester, HF receiver and the usual hand tools. Drill press and pin chuck desirable.

## Circuit

A Colpitts oscillator maintained by FET Q2 supplies the 3.5-3.58MHz signal. To reduce frequency drift, the oscillator runs continuously. The VFO is well shielded, but a sub-microvolt signal was still audible, so during receive periods the VFO runs above the listening channel. On transmit or net, transistor Q1 switches



General View

C1 into circuit and the frequency is pulled down onto the working channel. Buffer amplifier Q3, a dual-gate FET, raises the power to about 7mW and isolates the VFO from load variations. By making the gate-two voltage variable, we have a means of altering the output power to suit operating conditions. Push-push doubler Q4-Q5 produces our 7MHz signal, followed by another doubler for the 14MHz signal. Active doublers are rather prone to parasitic oscillation, so the emitters are left unbypassed to enhance stability. If circuit balance is good, suppression of the input frequency will be at least 50dB. Each doubler is required to deliver in the order of 1mW, which is raised to 20mW by the broadband amplifier at Q8 (13dB gain) then to about 3W with power MOSFET Q9 (around 20dB gain). The waveform at the drain of Q9 can be very fruity and rich in harmonics. The signal must be therefore be cleaned up before application to the antenna. Seven-element low-pass filters (LPFs) for each band do the job nicely.

Various keying ideas were tried, including that of keying the oscillator (well, it was worth a try, but was too chirpy and clicky. Remember, all VFO frequency variations are multiplied by four at 14MHz!) Keying buffer Q3 was not bad, but still unacceptably chirpy. Keying amplifier Q8 provided click- and chirp-

free operation, but the key-up 'back-wave' was only about 20dB below key-down. The final solution was to key Q8 and the bias to the MOSFET PA. The supply to these circuits is ramped up in about 5ms and down in 10ms by Q10 in response to the key (the popular Accukeyer circuit may be substituted for the hand key shown here).

## Construction

It appears that some builders are discouraged by having to make printed circuit boards. Indeed, there is a perception that a circuit board must be used if the thing is to work properly. Most HF circuits will work entirely satisfactorily with just about any well-known construction method you choose, provided signal carrying conductors and by-pass leads are kept as short as practicable, and inputs are well separated from outputs. Stability is greatly enhanced by mounting the components above a good 'ground plane' substrate. Single or double sided circuit board material is ideal. For RF work, we should avoid any kind of board that uses parallel strips of copper and indirect grounds, eg Veroboard.

For this project I have moved to a practical alternative to the etched board. Where two or more components must connect, a matrix board pin is inserted into the circuit board, which is drilled to

the exact pin diameter for a snug fit. 0.9mm appears to be a common size, but do not assume dimensions — measure pin and drill with a micrometer if available. Vendors can generally supply pins and drills to suit. Very small drills are also available from engineers' tool suppliers. After drilling, the copper is removed from around the hole by carefully countersinking with a larger drill (see Ref 1).

We need a robust oscillator for this transmitter, and it is strongly recommended that the VFO be housed in a solid die-cast box in accord with contemporary practice for mechanical and electrical stability — the box providing the needed thermal inertia, mechanical rigidity and shielding. The 100 + 200pF capacitor shown is adequately suited to this application and readily available. The walls of the box are not perpendicular, so the level pot should be mounted upon a bracket with the shaft projecting through a hole as for the capacitor shaft.

Three circuit boards are required: VFO, doublers, and amplifier. I suggest you build the VFO first. It is vital that high stability capacitors are used in the VFO tank. Styrofoam (polystyrene) capacitors are about half the cost of silver micas, temperature stable within normal limits and have a slight negative coefficient. For values below 100pF, NP0 types are ideal. You may have to change the value of C2 to obtain the correct frequency range if C4 cannot do it. Check the frequency and stability with the lid screwed into place. A screwdriver blade inserted in the output connector should radiate enough signal to be checked on the station receiver. If greater tuning range is required, simply connect a small NP0 capacitor between the tags of the 100 + 200pF unit to obtain the desired range.



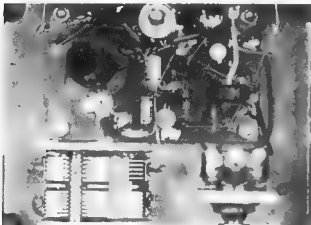
*Driver & PA Board*

The VFO tank coil L1 should be wound upon low loss, temperature stable material, 0.5" (12.7mm) diameter. Do not use plastic. PTFE (Teflon) is ideal, glass also good; ceramic if you can get it. Mine uses bakelised paper tube. The coil was wound under tension (that is, by anchoring the spool in a vice and walking towards it, maintaining tension all the way) on a hot dry day, then dipped in Estapol to seal it. Material which cannot be drilled will need small solder tags glued onto the former at appropriate points. Note that the coil is located greater than one coil diameter from any metal object. The ferrite bead on G2 of Q3 may be held in place with a small blob of wax.

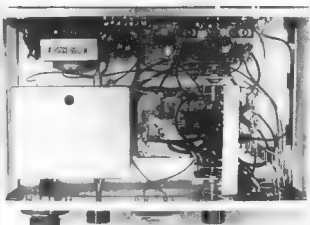
Broadband transformers T2 and T3 are made as follows. Take three 30cm long strands of #24 (0.5mm) enamel wire. Twist them together at one end and clamp that end in a vice. Arrange the wires mutually parallel, then twist the free ends together. Clamp the group in the chuck of a hand drill. Whilst keeping tension on the group, turn the drill until you have about three twists per cm, with no kinks or transpositions, ie the whole length must be uniform. Pull the drill to set the twists. Now wind the triplet onto the FT50-43 core — about 10 loops should fit nicely. Take care not to scratch the enamel. Cut the leads to about 3cm. With a multimeter on ohms, identify the 'primary', which can be any of the three 'windings'. Mark these with a marker pen and push them to one side out of the way. Now identify the starts and finishes of the other two windings. Connect the start of one to the finish of the other to form the centre tap. T4 and T5 are made in similar manner but with #22 (0.63mm) and without the primary. Corresponding winding ends are shown on the circuit with a dot.

Test the gain of your five 2N3053s, and select two pairs for the doublers which are closely matched in gain, thus making possible a really effective phasing out of the unwanted input signal.

The band change switch posed a problem. The input to the amplifier must be a selection of either 3.5MHz from the VFO, or 7 or 14MHz from the doublers. To simply use one wafer to switch these along with the required LPF would be asking for trouble. Some physical separation is necessary to preserve circuit stability. There are very few wafer switches of more than one bank easily available. If you have one where a shield can be placed between input and output



*VFO*



*Internal view showing board placement and switch*

wafers, use it. Shown is a suggested approach. Two wafer switches, each with 3-pole/3-position are mounted upon brackets. A length of sheet metal is formed into a carburettor style linkage with 0.25" holes drilled through each end and slotted with a junior hacksaw. These are each clamped onto the shaft with a screw, washer and nut of appropriate size.

For accurate netting, some kind of reduction drive should be connected to the VFO capacitor. The vernier shown was purchased from Dick Smith's, P/N P7170. To take up any small misalignment, a length of 0.25" rubber fuel hose is used to couple the two.

Power supply requirement is 12 to 13.8V at up to 1A. A typical circuit is included here if required. Remember to cover all mains wiring to prevent accidental contact, and install a 500mA fuse and switch as shown. Mains earth must be connected to chassis ground.

The box shown is a K&W P/N C1284 measuring 30cmW x 20cmD x 9cmH. If this box is chosen, remember to allow for the front and back overhang of the cover when marking out.

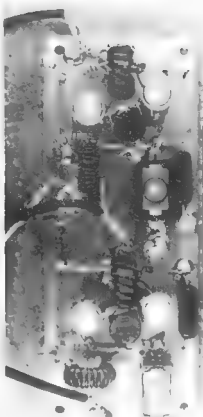
The PA MOSFET should be mounted upon a #6030 heatsink. Fit a mica washer between device and sink, and an insulated washer under the securing nut. A solder tag under the washer provides the drain connection.

The capacitors in the LPFs should be styrofoam or mica if available — avoid ordinary disc ceramics if you want a low loss filter. 1800pF greencaps may be substituted for C33 and C34. The braids of the coax connections at the band switch should all be joined together, as shown in the circuit.

## Tune-up

From the foregoing it is assumed that the power supply is working, and the VFO is supplying a satisfactorily stable frequency. There should be about 1V open circuit voltage at the VFO output connector as measured with an RF probe and hi-Z meter.

Check your wiring, and that all polarised components are correctly placed. Connect a 50ohm dummy load or power meter of adequate capacity to the TX output (two 100ohm 1W resistors in parallel upon a suitable connector will do). Turn level control R8 to min, and bias trimpot R23 to mid range, and balance trimpots R11 and R15 to mid range. Set the band switch to 3.5MHz and close the key. There should be about 1W output power. Adjust bias pot R23 so that about 500mA is drawn from the supply as a preliminary setting. Now turn up the level control. You should see a smooth rise in output to about 4W, represented by



Multiplier Board

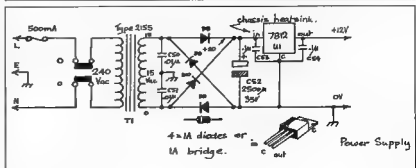
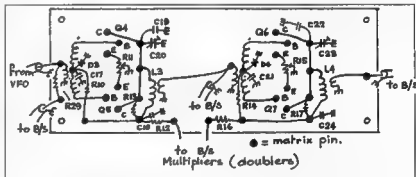
14V measured across 50 ohms with the RF probe. The current should rise to about 900mA. Listen to the keyed signal on a receiver. It should sound clean and chirp free. You may have to connect a short clip lead to the hot side of the load to get a better sample.

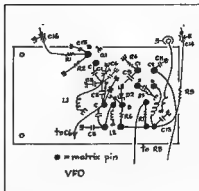
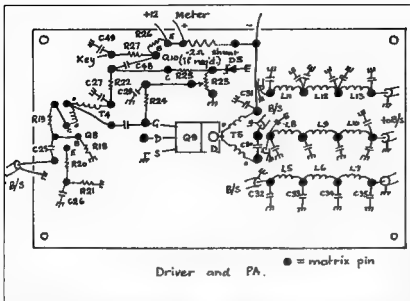
Now set the band switch to 7MHz. Close the key, and peak C20 for maximum signal at about 7.025MHz. Do the same at 14.05MHz with C23. On 7MHz connect the RF probe to the collectors of Q4-Q5, and carefully adjust R11 for the just perceptible dip as the unwanted 3.5MHz component is phased out. Connect the probe at Q6-Q7 and do the same on 14MHz for the unwanted 7MHz component by adjusting R15. If you cannot see the dip (it is very small), listen to the unwanted signal on your receiver and adjust for best null.

Overall efficiency is lowest on 14MHz (the useful limit of the MOSFET in this configuration), so we may make a final adjustment of the standing PA drain current by setting the level pot to min. Close the key and adjust the bias pot for about 500mA. Rotating the level pot should cause the current to rise smoothly to about 800mA at 3W output.

## Problems

There are no perceived traps for the handy radio/electronics enthusiast. If you have followed the suggested approach, the oscillator should be sufficiently stable





knobs, circuit board material, pins 1A meter or 1mA meter with 0.2ohm shunt, VFO coil former, 6030 heatink and insulators, hook-up wire, #20, #22 and #24 winding wire, miniature 50ohm coax, key socket, coax sockets, spacers (16), aluminum for brackets and linkage, screws, nuts.

## References and Further Reading

1. How to Lay Out RF Circuits, White, G3SEK, *Rad Comm* Feb/Mar '91.
2. Some Practical Tips on VFO Construction-AR Jan '88.
3. Solid State Design, Hayward & DeMaw, ARRL.
4. WIFB's Design Notebook, DeMaw, ARRL.
5. QRP Classics, ARRL.

for normal purposes. Thirty minutes or so of warm-up time should have the device slowly cycling up or down only a few tens of Hz per TX/RX over on 14MHz.

To eliminate warm up delay, there is no harm in leaving the set on 24 hours per day. See Ref 2 for further notes on VFO construction. Some salient RF and DC voltages are shown to aid in any trouble-shooting. When netting onto a strong station, you may also have to close the key to obtain a stronger netting signal (the signal is not put to air). If you cannot solve a problem with this project, please write, including an SASE, and any reasonable amount of help will be returned.

## Parts

The bulk of components chosen are known to be available from the usual electronics retailers. Here in VK3, we are fortunate in having two suppliers of radio type bits: Stewarts (03 543 3733), which can supply Amidon cores and most components, and Electronic World (03 723 3860) for all components, including the 3x3 wafer switches, the power MOSFET and the variable capacitor. Other Amidon suppliers regularly advertise in this journal.

## A Stronger Signal

It is easily possible to work stations far and wide, and derive great satisfaction with just 3W, even with a modest antenna. Nevertheless, you may wish to add an amplifier at some later date. The 25W MOSFET linear amplifier described in AR Jan '91, with the addition of a

14MHz LPF will suit this TX, and makes a useful enhancement to the set. Anticipate about 30W on 3.5MHz, 15W on 14MHz.

## Miscellaneous

Case to suit or material for same, die-cast box 120 x 95 x 56mm, wafer switch 3 or 4 pole/3 pos(2), DPDT centre off switch, DPDT switch, vernier dial and coupler,

## Parts List for the Multiplier Transmitter

### Capacitors

1.5pF NPO  
6.8pF  
47pF  
68pF  
25pF "beehive" air variable  
55pF (approx.) compression mica  
100pF air variable  
180pF polystyrene or mica  
220pF polystyrene or mica  
390pF polystyrene or mica  
820pF polystyrene or mica  
1000pF polystyrene or mica  
1800pF polystyrene or Greencap  
1000pF feedthru  
0.01pF/100V ceramic  
0.1pF monolithic or ceramic:-  
28, 29, 30, 31, 49, 53, 54  
0.47pF monolithic or ceramic  
2500pF/35V electrolytic

C9  
C1  
C2, 3  
C22  
C4  
C20, 23  
C6  
C19  
C36, 37, 40, 41, 42, 43, 44, 45, 46, 47  
C5  
C32, 35, 38, 39  
C7, 8  
C33, 34  
C14, 16  
C50, 51  
C10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 27,  
C48  
C52

### Resistors

4.7ohm, 1/4W  
10ohm, 1/4W  
47ohm, 1/2W  
68ohm, 1/4W

R20  
R9, 12, 16, 22  
R24  
R21



## Something in the Air?

Packet radio users in New South Wales may hear some strange signals on two metres over the next few months.

Gareth VK2ANF is doing some experiments sending data to and from light aircraft, starting with ground to ground, then air to ground, and finally air to air.

The aircraft will not accept contacts, and will beacon periodically. Initial testing will be done on a quiet frequency away from other traffic, but later a busy packet channel will be used to simulate congestion.

Amateur stations not participating in the experiment are asked to ignore the signals from VK2ANF. If a popular packet channel is being used, please feel free to send packets while the aircraft are beaming — this will be important in evaluating the data integrity.

The aircraft will be flown by pilots who are also amateurs, their call-signs to be advised. However, in the final demonstration phase of the experiment, aircraft call-signs may be used, DoTC approval pending, of course.

If you would like more information, please contact Gareth VK2ANF at PO Box 1387, Dee Why NSW 2099. **ar**

100ohm, 1/4W  
470ohm, 1/4W  
390ohm, 1/2W  
500ohm miniature flat mount trimpot  
5kohm miniature flat mount trimpot  
1kohm, 1/4W  
1.5ohm, 1/4W  
2.7ohm, 1/4W  
4.7ohm, 1/4W  
10ohm, 1/4W  
100ohm, 1/4W  
220ohm, 1/4W  
100kohm linear pot

### Semiconductors

MPF102, 2N5457 etc  
MFE131, 40673 etc  
2N222, 2N3904 etc  
2N3638, 2N3906 etc  
2N3053, BFY50 etc  
MTP4N08, 1RF510 etc,  
1N4148, 1N914  
6.2V/400mW zener  
5.1V/400mW zener  
1A/400V diode  
LED  
LM7812, 12V/1A pos regulator

### Inductive Components

1 or 2.2 or 2.5mH RFC  
Amidon FT50-43 toroidal core  
Amidon T50-2 toroidal core  
Amidon T50-6 toroidal core  
Amidon FB101-43 bead  
Transformer, 15V/1A

R5  
R6, 18, 29  
R25  
R11, 15  
R23  
R2  
R19, 28  
R1  
R13 17  
R10, 14, 26, 27  
R3, 4  
R7  
R8

Q2  
Q3  
Q1  
Q10  
Q4, 5, 6, 7, 8  
Q9  
D1, 3, 4  
D2  
D6  
D5, 8, 9, 10, 11  
D7  
U1

L2  
T1, T2, T3, T4, T5  
L3, L5, L6, L7, L8, L9, L10  
L4, L11, L12, L13  
G2 of Q3  
T6

ar

## QTC (I Have a Message For You)

It has been brought to our attention that copies of this book which was reviewed by Ian Crompton VK5KIC in the July issue of this magazine are available from Alec Sandilands, 10 Nelligen Place, Nelligen NSW 2536, at a cost of \$A17.00 hardcover or \$A10.85 paperback (postage and packing inc). Suggest you contact Alec with any queries. **ar**

## Australian Radio and Radar Publications

COLIN MACKINNON VK2DYM, 52 MILLS ROAD, GLENHAVEN 2156

There have been a number of books published over the years which deal with the history and technical development of radio and radar in Australia. Most were printed in limited numbers and are sometimes hard to find. So that interested readers and researchers may know what each contains, this column will give brief details of those publications known to me. In general terms the books selected contain historical or technical details of Australian amateur radio, commercial or military radio and radar, and I do not include publications dealing only with radio or TV programs and broadcast personalities.

I am not covering trade technical booklets like the AWA and Philips publications, nor at this stage do I intend to list communications and radar equipment. I may do that later if there is sufficient interest. If anyone can add to my list, I would appreciate details so I can include them in the catalogue. **ar**



# FIRST IN AUSTRALIA DIGITAL COMMUNICATIONS DAY

7th December 1991

## AT OUR NEW EMTRONICS STORE IN PARRAMATTA

### Digital Communications, Amateur Radios' Gateway to the Future

- Are you confused about the whole concept of Digital Communication in Amateur Radio?
- Are you interested in PACKET, RTTY, AMTOR, FAX and CW?
- Are you confused about Digital Control Software and how to use it?
- Is Satellite Communication something you would like to become actively involved in?
- Have you a computer and wish you knew more about how to use it for Amateur Radio Digital Communication?

Then EMTRONICS at PARRAMATTA is the location for you to visit on Saturday 7th December. There will be working displays of

- PACKET, RTTY, AMTOR, using the PK88, PK232 and TNC24mkII controlled by a variety of software
- Computer control of the KENPRO KR-5400 Rotator — ideal for the Satellite beginner or experienced user
- Computer control of ICOM receivers and transceivers
- Decoding of weather Satellite pictures using the latest Australian Software and Hardware

Come and discuss your particular needs with our friendly qualified staff who will be only too pleased to answer your questions and discuss your equipment needs. Our staff are Telecommunication engineers as well as practising Amateur Radio Operators capable of demonstrating and discussing all aspects of Amateur Radio. Don't miss this golden opportunity to discuss this fascinating field of Amateur Radio. This is a first for Amateur Radio in Australia brought to you by

**EMTRONICS the Professionals in Telecommunications.**

## DATA PRODUCTS Low-cost

WE HAVE SOLD OVER 1200 PK-232 MBX  
— THE WORLD'S BEST MULTI-MODE DATA CONTROLLER



### PK-232MBX Multi-mode Data Controller:

Most popular multi-mode controller ever made. RS-232 compatible controller for Packet, Baudot and ASCII. RTTY, AMTOR, STOR, ARG and PLC. Morse code and W/FAX also. Receives NAVTEX, AMTEX and TCM wave to CHIRP-REV file design for better copy. Built-in 8K byte PacketMail™ personal packet mailbox with auto forwarding. SSI™ for automatic RTTY signal identification. KISS mode for TCP/IP compatibility. Most Made for user friendly software interface. Cables and connectors included.

**\$640**



## model TNC-24 Mk II from TELEREADER!

ALL MODES IN ONE!  
INTRODUCING SINGLE AND MOST ADVANCED  
NEW MACHINE FOR COMPLICATED  
OPERATORS

FSK 1200, 3000ps, PSK, AS, RTTY, FAX —  
RTTY ONLY BUILT IN PSK & AS — 1 MODES  
FOR SATELLITE COMM. ALL MODES IN ONE!



PACKET, RTTY,  
CW, AMTOR, FAX  
ALL IBM SOFTWARE INCLUDED

ONLY  
\$695

## PK-88™ Packet Controller

Improved hardware and software design make the PK-88 your best choice for a packet-only controller. Integrating the popular packet software from the multi-mode PK-232 with a special AEA TNC hardware design gives you the best of both worlds.  
WRITE FOR MORE INFO

**\$299**

BANKCARD  
MASTERCARD & VISA



# EMTRONICS

MAIL ORDERS  
WELCOME

### HEAD OFFICE:

32-34 Westworth Ave, Sydney  
NSW 2060. TLX: AA73600  
PO Box K21 Haymarket, NSW 2000  
Ph: (02) 211 9085  
Fax: (02) 201 1508

### PARRAMATTA

7 Smith St,  
Parramatta  
Ph: (02) 667 2210  
(02) 667 2211

### VICTORIA

288-294 Ocean St, Melbourne  
Vic 3000  
Entrance from L1 Lonsdale St  
Ph: (03) 670 8551 or 670 8330  
Fax: (03) 670 9671

### QUEENSLAND

418 Logan Rd,  
Shannon Corner,  
Qld 4216  
Ph: (07) 394 2555  
Fax: (07) 394 4316

### WESTERN AUSTRALIA

336 Albany Highway,  
Victoria Park WA 6100  
Ph: (08) 470 1118  
Fax: (08) 472 3705





# A SMALL HELICAL ANTENNA FOR TWO METRES

IAN GLANVILLE VK3AQV  
6 LEGGHO RD,  
MYRTLEFORD 3737

**A**S I APPROACHED THE finishing stages of a home brew 2m FM transceiver I decided that a rubber ducky or similar sized antenna would finish off the project just nicely. Having built helical antennas for HF I decided to apply the same principles to VHF. That is, when a half wave length of wire is wound in this fashion it produces an electrical quarter wave antenna. What I came up with was an antenna measuring just 210mm long ( $8\frac{1}{4}$ " ) plus BNC connector.

## Construction

For the former I used 210mm of polyethylene from an old piece of 100ohm coax. This has a diameter of 7mm. Remove the sheath, braid and inner conductor. Using a Stanley knife, shape one end to fit the BNC coax connector. Next, drill a 1mm hole at an angle toward the bottom to allow the wire through to the cavity left by the inner conductor and out to the connector. Using some coax braid, form a solid tip of 12mm on the top end. Tin it to keep it in place.

Now take one metre of No 24 gauge wire and wind as per figure 1. This length may well prove to be too long, but use all the wire. You can trim it up later.

Solder one end to the braided coax at the top and the other end pass out through the hole you drilled near the bottom and fit the centrepiece from the BNC connector.

Now comes time to test it. Using a BNC female connector, solder four radials of 500mm at 90-degree intervals to form the ground plane, and attach this to a test mast in a clear location. At the bottom of the female connector, solder a short loop of two turns. Connect the antenna and couple a dipper to it and check for resonance. The frequency should be below 146MHz. To achieve resonance, trim wire from the bottom until the dipper indicates resonance at the desired frequency, say 146.50MHz. Now replace the two-turn loop by a short piece of 52ohm coax. Try to get the SWR meter as close as possible to the antenna. Check the SWR (identify your transmissions and use low power in an unused portion of the band, please). The SWR will probably be quite high. Try shifting the wire around, altering the turns spacing. The figure is an in-

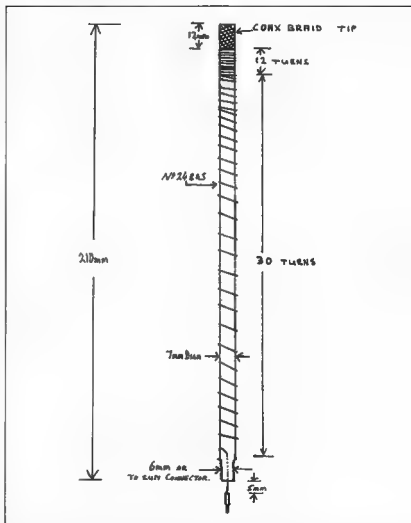


Figure 1: Two-metre helical

dication of how mine finished up and can be used as a guide. When you get the SWR as low as you can (in my case this was still above 2:1) bend the radials down. All being well, the SWR will drop to an acceptable level. I further tested mine mounted on the printed circuit board case of my home-brew hand-held. It was nice to know it presented a low SWR to the device to which it will be finally connected. Finish off by glueing the for-

mer to the BNC connector and covering the antenna with some heat-shrink tubing.

So, there you have it. A small and effective helical antenna. Perhaps you may like to now try one for HF.

## References

Radio Communication July 1974  
ARRL Antenna Handbook

or

# QUAD LOOP FOR HF USE

## OR GIVE ME A HOME AMONGST THE GUM TREES!

ADRIAN FELL VK2DZF  
PO Box 344, BAULKEHAM HILLS 2153

**T**HE QUAD LOOP THAT is described in this article has been in operation on my QTH for the past four years. For me, that's saying something, as my experimental nature often makes for many changes. This loop hasn't moved!

Owners of quad or delta type loop antennas will need no further introduction to this excellent antenna. Those of you who have not tried a full wave loop antenna should at least find this article interesting; maybe it may provoke more incentive to give it a try.

Although a full wavelength long loop of wire can often present to the constructor more problems than a dipole, the extra will be worth it at the end of the day because the quad loop is a superb antenna. Not only does this loop provide you signal with some extra oomph, it makes an excellent receive antenna, being lower on QRN pick-up and a good signal-to-noise ratio is presented to your receiver.

Those amateurs who want a high performance antenna that fits somewhere in between a 6SRV and a TH6DXK should look no further than the quad.

### Construction Method

There are many, many ways to construct a quad loop; this is only one of them. I have made full use of two 70' gum trees located in my suburban block of land.

The idea of not using spreaders not only saves expense, but makes for a less visible antenna, thereby keeping the neighbours happy.

The overall arrangement is shown in detail in Figure 1.

The matching method I chose to use was the gamma wire with a series tuning capacitor to tune out reactance; this arrangement works extremely well in practice and, because this arrangement of matching assures minimal (if any) radiation of RF from the coaxial cable, low TVI is guaranteed. This is important when one lives in suburbia.

Wire size is optional, but a good fairly heavy gauge multi-strand type (such as earth wire) is recommended for the set-up in Fig 1.

Wire size, construction methods and

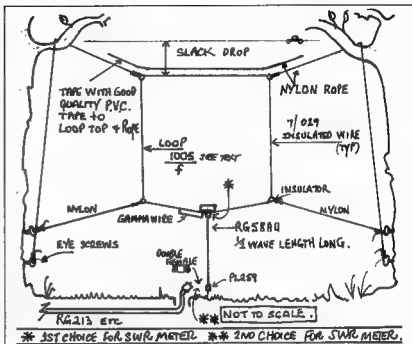


Figure 1

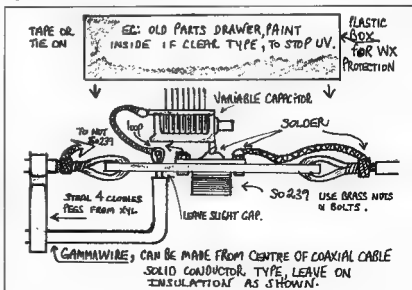


Figure 2

height of the loop above ground will affect the exact resonant point of the loop, but as this loop is very broad (large bandwidth) the formula  $1005/(RMHz)$  should assure a very close result.

One can use the VSWR readings to determine where resonance occurs and make use of a GDO or noise bridge. Other arrangements such as tuning stubs could be used and, if further information on the various methods available are required, the reader should refer to *Handbook on Cubical Quad Antennas* by William I Orr and Stuart D Cowan.

The details for a starting point for tuning are given in Fig 3, and in my case (20m quad loop) the distance "L" had to be increased somewhat to obtain a very low VSWR reading.

Adjusting tuning capacitor "C" along with distance "L" should achieve a very low, if not perfect, VSWR of 1:1. By checking the bandwidth and seeing the extremes, resonance will be found. The loop size may have to be made smaller or larger, so allow for this during construction.

It seems a bit time-consuming, doesn't it, but it's worth the effort.

Don't worry if you don't get the VSWR down to 1:1, the loop will still work like a charm.

The SWR meter should ideally be inserted at the point \* (marked in Fig 1) or, if that is too difficult, you can make a 1:1 transformer by using a half wavelength of RG58AU coaxial cable. This will allow for checking and adjusting the SWR at ground level. RG58AU is used because it is much lighter in weight, thereby not pulling the square out of shape too much.

Figure 2 shows the method I used to construct the centrepoint and gamma construction, and if you don't wish to use a variable capacitor this could be changed with a fixed type, or a piece of coaxial cable can act as a good capacitor.

If you have a digital capacitance meter, you could substitute as suggested above.

Allow for wires to flex, and insulate the wire going from the capacitor to the gamma line. RG58AU (shield only) makes for a good flexible connecting wire, and all should be self-explanatory from the drawing in Fig 2.

Don't forget the weather protection box to cover all the domes; paint it if it's clean — helps keep out the UV rays.

Don't use bright colours; some birds like to eat and pick at different colours. Green might be worth trying.

## Getting the Loop in the Air

If two trees are used as in Fig 1, the method I used to get the nylon cord over

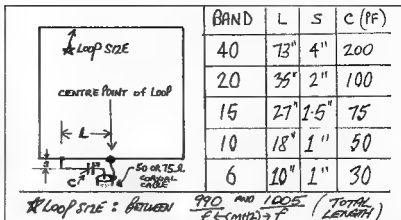


Figure 3



Adrian VK2DZF at his other hobby — hi-fi.

the branches was first to catapult a lead shot connected to a light fishing line over the desired branch. This should then fall back to ground level.

The fishing line is then joined to plumb-line type cord and pulled over the branch by the fishing line, once the plumb-line is over and down. This is then used to pull over the final thick nylon rope. If you are a "good shot" with a catapult, the whole exercise will be quite easy and, after a few years, you will become an expert!

My loop is about 45' high to the top, leaving the bottom of the quad loop about 27' off the ground, well clear of everything.

The RG58U can then be pulled to one tree when the antenna is not in use,



Judi VK2ELF works CW only. The Fell couple have four children. Judi won the CW section of the RD contest in 1984.

leaving the ground level clear. Now it looks like a "normal" back-yard again.

If a slack level is left at the top of the loop as in Fig 1, the trees can move around in the wind without the nylon cord rubbing on the branch.

One could of course use pulleys and weights, but I have found that method is not necessary. Don't tie the cords around trees; you could ringbark the tree. Better to use screw eyelets (or similar), it will not harm the tree that way. I used egg-type insulators at the corners. I then secured them with stiff wire, put there on the loop first.

## Performance

The quad loop will transmit (and receive) its strongest signals at right angles to the loop. Looking at Fig 1, this would be in and out of the page.

My two trees have determined the direction of our loop to point in a NE/SW direction; this is towards the USA, both long and short path.

This will put out transmitted signal at a 2-3 S-point disadvantage towards Europe, because the sides of the loop face this direction.

In practice, this doesn't come to many problems, except for one unavoidable fact of life for 20 metres "QRM". It's often very hard for European stations to copy a S-5 signal if they are experiencing heavy QRM. So, to maximise the signal strength, point the loop in your favourite direction, but don't worry too much if you can't; it still will work quite well.

Another way to overcome this problem is to use two loops at right angles to each other (see article by VK4FUQAR March 1991). Our average signal reports (on CW) to the east coast of the USA are S-7, rarely below S-5, sometimes S-9. Working phone, I have received S9 reports to the USA (and even Spain) using an old TS520-S. I'm not worried about signals being down a bit in the direction of the sides of the loop as I switch over to my Z-match — Multi-band inverted V antenna, which works very well on 20 metres — in the direction of the major lobes. The loop also works extremely well for local (VK-ZL) stations as well.

In conclusion, a fixed (non-rotated) quad loop does have some weak spots, but these are (relatively speaking) very minor compared with the overall performance, which is excellent. Give the quad loop a try.

## FOR ANTENNAS & ACCESSORIES

We manufacture a comprehensive range of HF, VHF and UHF antennas, baluns, power dividers etc to suit your application. Three of our log periodics provide continuous coverage from 13-30MHz, including WARC frequencies, and replace outdated tri-banders. Now in use in 26 overseas countries and six continents

- Create rotators, coax cables & non-conducting guy/halyard materials
- B&W all frequencies 1 8-30MHz and fed vee All frequencies 3.5-30MHz folded dipole. Both 1kW No radials required
- Hard-drawn copper antenna wire.
- Aust/NZ distributor for Create antennas/rotators & Phyllystran (Kevlar) non-conducting guying materials.
- High gain VHF & UHF amateur, scanning & TV antennas.
- Built section triangular aluminum towers for fixed or tilt-over applications (refer March/April 1987 AR)
- Selections of power chips and TX tubes at friendly prices
- VSWR/PWR metres by Diamond 10 1300MHz 5 models All in stock

Write or phone for free catalogue

### ANTENNAS

PO Box 80 Birch Vic 3463  
56 Campbell Street, Birch Vic 3463  
Phone (054) 92 2224 Fax (054) 92 2865

## Other Options

Feeding the quad loop with a gamma match and coaxial cable is not the only method available. Balanced open wire feeders with a Z-match coupler would be another excellent method. There are plenty of options open for feeding arrangements; pick one that suits your own requirements if the gamma doesn't suit. A quad loop can be used as an excellent multi-band antenna, and suggested further reading on this subject is available from RSGB publications.

I shall be investigating the capabili-

ties myself of multi-banding the quad loop in conjunction with the mighty Z-match coupler. No doubt it will work, but I am still reluctant to take down the gamma quad loop.

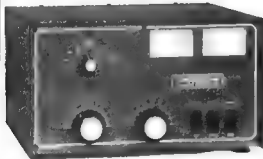
Good luck, 73, Adrian Fell VK2DZF

## References

RSGB Handbook & Antenna Books  
ARRL Handbook & Antenna Books  
All About Cubical Quad Antennas  
William Orr; Stuart Cowan  
AR March 1991, by Felix Scerri  
page 13

# AMERITRON

## AL811 600W PEP HF Linear amplifier



Shades of the magnificent past! Remember the days when a power amplifier looked like it meant business and was heavy enough to convey the message? Well those days are back! Ameritron, one of the USA's leading amateur power amplifier manufacturers has released an amplifier using three 811A tubes in Class AB2 grounded grid to deliver a clean, comfortable 600W PEP. The AL-811 amplifier needs only 40W of drive for the VK legal limit. Best of all the cost of running the AL-811 is low, and a new set of tubes will only cost \$105 not \$350 - \$700 or more for other amplifiers using more exotic tubes.

- 600W PEP output
- All bands 160-10
- Three 811A tubes
- Quiet fan cooling
- Rugged construction
- 50Hz rated transformer
- Easy to use
- Vernier anode tuning
- Large twin meters
- Safety interlock

Ameritron's choice of the 811A is no accident, nor is it a purely economical one. The 811A has developed an enviable reputation for robustness and reliability over many many years of operation in amateur and commercial service. Its directly heated thoriated tungsten filament is immune to cathode stripping which can ruin an expensive indirectly heated tube in a few milliseconds if the amplifier is mistuned. Ameritron have chosen a simple yet extremely effective input circuit, a single Pi section with a slug-tuned coil for each position of the band switch. The slugs of the coils can be easily adjusted without removing the cover so that you can peak the amplifier without danger of being exposed to high voltage supplies.

AL-811 **\$1449.00** plus freight

# Stewart Electronic Components Pty. Ltd.

44 Stafford Street Huntingdale : PO Box 281 Oakleigh 3166

Phone (03) 543-3733  
FAX (03) 543-7238

# GETTING STARTED WITH AMATEUR RADIO SATELLITES

(PART 10)

BILL MAGNUSSON VK3JT, 359 WILLIAMSTOWN RD, YARRAVILLE 3013

*(Concluded from previous issue with editorial apologies to Bill for having to interrupt his train of thought!)*

**R**ange calculations also have another important spin-off. The rate of change in respect to time at the observer's location is a measure of how quickly the satellite is moving towards or away from the observer. This can be resolved into a factor which can be applied to the beacon and transponder frequencies to give a printout of doppler shift.

This is why some programs require the user to enter the beacon frequencies. Remember, however, this is only a one-way doppler calculation and is of use only when communicating directly with a satellite. It does not take into account a signal being relayed through an orbiting transponder. This is a much more difficult problem as it involves two different rates of change relative to two separate locations.

That's not the end of it. There are

many more things that can be worked out from the key elements. Satellite orbital speed, orbit period and equator crossing increment to name a few. Some are important, some not. The time of next rise and set. Visibility time in minutes. Footprint coverage. Mutual communication windows. A program could be made to print out all these and more. Somewhere you have to draw the line.

The Karl Meinzer pocket computer program, for example, prints out only elevation, azimuth and mean anomaly. It can be extended to include range, height and the sub-satellite co-ordinates, but this slows it down.

The speed of calculations is of virtually no importance to a modern fast computer. It'll work faster than you can read or your printer can print. But not everyone has an IBM486. My old BBC computer runs in Basic at 1MHz and every

extra thing you ask it to do takes more time. I try to bypass as many unnecessary calculations as possible to speed things up.

Now I'm not suggesting you go out and learn programming so you can get into your software and speed it up. Most modern software is written in machine language and is probably running as fast as possible anyway.

The purpose of this final article in the series has been to de-mystify the goings on inside your computer. I hope it's gone some way towards doing that without becoming too complicated.

In fact, I hope this whole series has gone a long way towards doing that for newcomers to the exciting subject of amateur satellites. Go for it; keep learning and enjoy.

ar

## TRY THIS

## Survival Radio

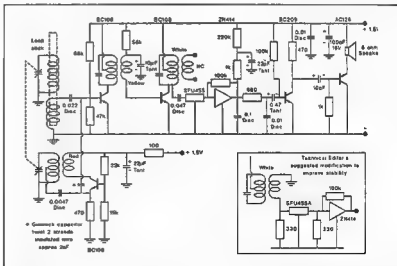
I have always been interested in low voltage equipment, and although I have come across commercial receivers which work from a three-volt supply, and even a 1.5-volt supply using germanium transistors (hard to come by these days), I have never seen a circuit using mostly silicon transistors and off-the-shelf components.

The results obtained using a 1.5-volt battery supply (one D Cell) were encouraging and it also worked reasonably well using solar cells.

Solar cells of approximately 0.45 volts are obtainable from one supplier, but the price is a bit high. If sufficient interest is shown, I feel sure a number of suppliers could make this item available.

A set of IFs is available from different suppliers, but the set I bought had two second IFs (both white top) and one third IF (black top), one oscillator coil (red top), but no first IF (yellow top).

I used them anyway, but if you can obtain the correct set of coils it would



be better.

The circuit above was developed after some experimentation and undoubtedly can be improved upon.

**J A HEATH VK2DVH**  
**LOT 26 REMEMBRANCE DRIVE**  
**TAHMOOR 2573**

93

# "NOT A HIGH TECH" HEADING FINDER

BRYAN BAILEY VK5BFB

44 CHARLBURY RD, MEDINIE GARDENS 5081

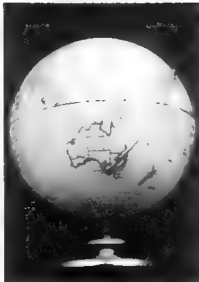
**T**HE SUBJECT OF THIS article is an old idea revisited. It was passed to me by Tony VK5JG and was, in fact, made by him and slightly modified by me.

A school earth globe is modified by removing the mounting and arc and remounting the globe on its south pole. The builder can use his/her initiative here. The mount can be wood or anything suitable from the junk box. I used a pulley from a Hoover washer. It is important that the "neck" joining the mounting to the globe be as thin as possible in order that the maximum sweep of the cursor be obtained.

This "cursor" arc which sweeps the globe and gives the actual heading is made up of stiff wire, brazing rod etc, one end of which pivots on your QTH and the other on the Antipodean point — the point 180 degrees from your QTH as listed below.

Pivots are formed at each end, by either bending or soldering suitable fittings from the junk box. Mine has contact blocks from a bayonet light socket.

If the globe does not have longitude and latitude marked, the points can be located on a map and transferred to the



Picture of finished heading finder

globe. Care is needed here to ensure the points are accurately marked before drilling holes. Fit the cursor and you now

have a useful aid in finding short path headings which is used by positioning it so your QTH faces south, running the cursor to your signal destination and turning your beam accordingly.

In this form, the unit gives short path headings, using an "Armstrong" rotator. Long paths can be indicated by an extension of the cursor on the QTH end and, if required, a degree scale can be easily added.

This unit is well worth making and is a good talking point. Signal paths can be quite a surprise to the uninitiated.

Antipodean points for QTHs around Australia are:

Adelaide	34.55N	41.80W
Alice Springs	23.40N	48.50W
Brisbane	27.28N	27.90W
Darwin	12.24N	48.50W
Hobart	42.50N	32.80W
Melbourne	37.50N	35.40W
Perth	31.57N	64.50W
Sydney	33.50N	29.00W

(Other antipodean points may be calculated thus:

Latitude: same as QTH, but in northern hemisphere.

Longitude: 180 — QTH's long; result is longitude west of Greenwich — Ed.)

ar

## Technical Correspondence

### More About Modulation

VK5BR's Modulation & Modes brought us all up to date. However, the treatment of AM did miss many points, apart from the excellent bit on vestigial AM for TV. It left no clues at all as to why it is still used! A version of vestigial AM was, may still be, used at up to 500kW by the American SW broadcasting system. The technology was to amplify the carrier, including a component of the original DSB, and one sideband in separate amplifiers and combine them at the antenna input.

Why is it used? Well, AM puts the smallest demands on receiver technology and stability, a critical point in certain areas of manufacture and use, also in situations like navigation beacons, aircraft communications and distress facilities on boats. It is the only system that allows simultaneous auto or manual DF whilst passing a message or simply monitoring the heading of a craft. Make a one-watter to talk to your mate on one of the vacant kHz on 10 whilst you monitor for DX! A 100W SSB with only 20dB carrier suppression

puts out a 1W carrier!

There is, of course, controlled carrier; you monitor the audio and transmit only enough carrier for de-modulation of the SSB or DSB. A lot easier now with audio-controlled AVC. Reduced carrier or super modulation (our licences permit it) where the received carrier has to be emphasised at the receiver to an adequate level to de-modulate the sideband/s. Selective fading is a problem at times with any form of AM. I see no reason why an old technique used for high speed (120wpm) Morse cannot be used. This used about 8Hz audio to deviate the carrier 16Hz. Drop-outs were infrequent, and signals could be used with lower S/N ratios. With restricted openings to the UK, this was important. I have used and built this system on CW, but had not thought to apply it to AM where it would be effective. The 8Hz beat would not be noticeable. Shared channel AM BC stations find an 8Hz carrier off-set excellent.

FSK can be used effectively at hand speeds and the RX signal used to "key" a local audio oscillator; QRN/QRM would be the sig on or off. This mode is quite nice on ordinary CW.

Robert R McGregor VK3XZ

2 Wiltshire Drive, Somerville 3912

ar

# MINI EQUIPMENT REVIEW

## THE YAESU MD-1C8 DELUXE DESK MICROPHONE

RON FISHER VK3OM

**T**HERE IS NOTHING LIKE an elegant desk microphone to add a bit of class to the shack. Not only does it add class to the general appearance, it usually adds a bit of class to the sound of the transceiver as well. The Yaesu MD-1C8 will do both in a big way. Dick Smith was kind enough to supply one with the FT-990 transceiver we reviewed recently, and I thought that really the microphone deserved a review of its own.

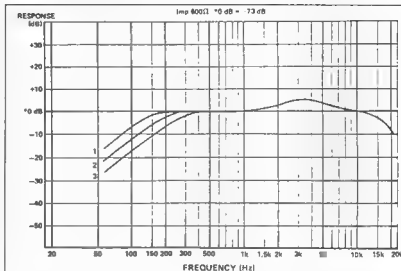
Let's have a quick look at the specifications. It has a basic impedance of 600 ohms and an overall response from 100Hz to 15kHz at the -6dB points. This puts it almost in the "broadcast" category. The directivity pattern is unidirectional, which means it has very little pick-up from the back. This is very useful property to reduce room echo, especially when speech processing is used. A three-position switch mounted under the desk stand provides two positions of selectable bass cut. You can select either full range, -5 and -10dB cut at 100Hz.

The base section has a PTT bar with a second section for PTT lock. Up/down buttons are conveniently positioned on the base with a "fast" button in between.

You can even use the microphone as a handheld with a PTT switch provided on the mike itself.

### The Yaesu MD-1C8 On The Air

The microphone was tried on three different transceivers. In each case, the reports were very flattering, with marked improvement over the standard hand microphones. With the directional response, I found I could get back much further from the microphone without producing any noticeable room echo. In



Frequency Response Curve of the MD-1C8

general, DX contacts preferred the bass cut switch in the third or maximum cut position, while locals liked the full bass response. It's interesting to note that while the specification rates the cut as -5 and -10dB at 100Hz, the curve supplied shows this to actually be about -12 and -18dB. This appears to be met in practice. No doubt they forgot to take into account the fact that the normal response is down 6dB at 100Hz.

The microphone comes wired to an eight-pin connector to suit Yaesu equipment. It would not be too difficult to change this to suit other makes. The MD-1C8 is priced at \$169.

Our thanks to Dick Smith Electronics for the loan of our review microphone.



Yaesu MD-1C8 microphone

ar

## UK Novices on the Air

As reported in the RSGB DX News Sheet, the **first UK Novice Licence** was issued in the last week of July this year.

Hugh McNeil, 13-year-old school student with the callsign 2E0AAA was reported operating on 28472kHz around 1100 UTC on Friday 26 July.

As far as the HF bands are concerned, UK novices are authorised to use the following frequencies/modes: (kHz) 1950-2000: CW/phone/RTTY/data; 3565-3585: CW; 10130-10140: CW; 21100-21149: 28100-29190

and 28225-28300: CW/RTTY/data; 28300-28500: CW/phone; 50620-50760 data; 51250-51750: CW/phone/data (phone means any type of speech modulation - SSB, AM, FM etc).

Call sign prefixes are: England 2E, Scotland 2M, Wales 2W, Isle of Man 2D, Jersey 2G, Guernsey 2U, Northern Ireland 2I, in all cases followed by the number 0, 2, 3 or 4 and three letters.

STEPHEN PALL VK2PS

■



# Product Review

## MORSE PROGRAM COMPARISON

CODEMASTER 4.0 AND VK1 Div (VK1PJ)

GRAHAM THORNTON VK3IY

Feature	Codemaster 4.0	VK1 Div (VK1PJ) Ver 5
Hardware Requirements	IBM PC or Compatible 192kb Dos 2.10 or later, or any 80-2 /3486, PC or MSDOS 2.10 to 5.0	IBM XT/AT, Wang APC, Sanyo 550/555 & Commodore PC (Not C64); any IBM clone. <200k RAM
Morse speed range (wpm)	5.5-40	1-100
Hard copy to printer	No	Yes
Output from serial/ parallel ports	Not stated	Yes
Morse from ASCII files	Yes	Yes
Instant Morse echo from keyboard	Yes	No
Keyboard entry for text	Only via other program	Part of package supplied
Text editing facility	Only via other program	Part of package supplied
Random cipher generator	Choice of group length. Contents letters or figures or both	Groups of 5 characters only; mixed letters and figures only
Saving of random group groups to disk for subsequent hard copy	No	Yes
Adjustable non-ITU spacing between characters and words	Yes	Yes
Exit option from current Morse	Yes	Yes
Pause and resume option	No	Yes
Structured learning program	Yes	No
Difficult plain language words in random order	Yes	No
Short frequently used "speed" words in random order	Yes	No
Speed error correction facility	Only by proportional selection of different Morse speed	Direct compensation of timing error
Print text from screen	Yes	Yes
Morse prosigns	Yes	Yes
Morse sending checker	No	No
Audio tone selection	Yes	Yes
Optional pre- transmission test tone	No	Yes
Operating handbook supplied	Yes	No, but can be printed from program
Price	\$39.95	\$5

The review copy of Codemaster 4.0 allowed only initial activation of the menu. Any attempt to change options or sending parameters resulted in a fault condition. It was necessary to re-load the program and re-set the parameters each time another option was desired. An IBM XT was used for the tests.

The following feedback has been received from Milestone Technologies Pty Ltd, supplier of Codemaster, after reading the above:

*The reported "bug" has now been rectified. Some of the factors compared are of little importance. It is unreasonable to compare a Morse training package with a Morse practice generator.*

We'll leave it to you, the reader, to decide these questions for yourself. Milestone Technologies' address is PO Box 699, Mt Waverley 3149, phone (03) 807 6767. The address of the VK1 Division is given on page 3 of this issue.

# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	Price to Members		Ref	Price to Members
<b>ANTENNA BOOKS</b>			<b>MORSE CODE (Contd)</b>		
Ant. Compendium Vol 2 Software only	82320	\$18.00	Amateur Radio Tapes Set 1: 5-10 WPM - APRIL	8X231	\$18.70
Antenna Compendium Vol 1 APRIL	82183	\$19.80	Morse Code Tapes Set 2: 10-15 WPM - APRIL	8X232	\$18.70
Antenna Compendium Vol 2 & Software APRIL	82294	\$32.40	Morse Tapes Set 3: 15-22 WPM - APRIL	8X233	\$18.70
Antenna Compendium Vol 2 APRIL	82292	\$27.80	Morse Code Tapes Set 4: 13-14 WPM - APRIL	8X234	\$18.70
Antenna Handbook - Oct - 1988	82217	\$15.80	Morse Tutor 5.25 inch IBM Disk	8X187	\$18.70
Antenna Impedance Matching - APRIL - 1988	82257	\$27.00			
Antenna Note Book W1F9 - APRIL - 1987	82179	\$18.00	<b>OPERATIONS</b>		
Antenna Patterns Worksheets Pkt of 10 - APRIL	82211	\$5.40	Amateur Radio Awards Book - RSGB	8X297	\$27.00
Antennas 2nd ed John Kous - 1988	82258	\$63.80	RFID Microcones	8X245	\$17.00
Beam Antenna Handbook - New ED. 1990 Oct	82215	\$17.40	Lisa Build CD-ROM - John Davidsons	8X195	\$18.00
Cubica Quad Antennas - Oct	82114	\$13.10	Maidenhead Locator Grid Atlas - APRIL	8X197	\$8.00
HF Antennas - Moxon RSGB - 1988	82118	\$27.80	Operating Manual - APRIL - 1990 3rd Edition	8X192	\$27.00
Novice Antenna Notebook Deluxe - APRIL	82182	\$14.40	Operating Manual - RSGB - 1985 3rd Edition	8X219	\$25.20
Medical Wire Antennas - FEBRUARY	82296	\$25.30	Paraport to World Band Radio 1991	8X248	\$30.60
Reflections - Transmitters Lines The Book - APRIL - 1988	82358	\$18.00	Practical Map - The World on a Heavy Paper	8X235	\$14.40
Smith Chart Expanded Scale PK of 10	82348	\$36.50	Practical Map of North America	8X232	\$7.20
Smith Charts S/Scale 1 Set co-ord Impedance Pkt of 10	82360	\$6.10	Practical Map of the World	8X234	\$7.20
Smith Charts Stand Scale 1 SET Co-ord PK of 10	82360	\$6.10	Radio Amateurs World Map	8X236	\$7.20
The Antenna Handbook - APRIL 1991 edition	82370	\$36.50	Short Wave Propagation Handbook	8X258	\$18.70
The Truth About CB Antennas - Oct	82319	\$15.80	The Complete CDR - Bob Locher - 1989	8X194	\$18.00
Transmission Line Transformers - APRIL 2nd edition	82329	\$28.00	Transmitter Hunting - TAB - 1987	8X222	\$32.30
Vertical Antenna Handbook - Lee - 1990	82284	\$18.70			
Vertical Antennas - Oct - 1988	82284	\$14.30	<b>PACKET RADIO BOOKS</b>		
Yagi Antenna Design - APRIL - 1988	82184	\$27.30	AUL25 Link Layer Protocol - APRIL	8X176	\$14.40
			Computer Networking Con (Packet) No 5 1988 - APRIL	8X187	\$18.00
<b>ATTY BOOKS</b>			Computer Networking Con (Packet) No 6 1987 - APRIL	8X188	\$18.00
The ATTY Compendium - BATC	82270	\$14.30	Computer Networking Con (Packet) No 7 1988 - APRIL	8X184	\$22.50
The Best Of CQ-TV - BATC	82273	\$15.80	Computer Networking Con (Packet) No 8 1989 - APRIL	8X298	\$21.80
			Computer Networking Con (Packet) No 9 1990 - APRIL	8X280	\$21.80
<b>CALL BOOKS</b>			Computer Networking Con (Packet) 1-4 1982/5	8X186	\$32.40
Radio Call Book International	82339	\$57.80	Gateway to Packet Radio 2nd edition - APRIL	8X188	\$21.80
Radio Call Book North America	82336	\$57.80	Packet Radio Made Easy - Rogers	8X182	\$18.50
			Packet Users Notebook - Rogers	8X235	\$16.70
<b>PISTON</b>			<b>SATELLITE BOOKS</b>		
CQ Brings Danger - APRIL	82208	\$9.40	Osce Satellite Review - Ingram	8X216	\$15.30
CQ Ghost Ship - APRIL	82204	\$9.40	Satellite AMSAT-NA 5th Symposium 1987 - APRIL	8X182	\$15.80
Death Valley QTH - APRIL	82205	\$9.40	Satellite AMSAT-NA 8th Symposium - APRIL	8X189	\$14.80
Grand Canyon QTH - APRIL	82207	\$9.40	Satellite Anthology - APRIL	8X180	\$14.40
Murder By QTH - APRIL	82209	\$9.40	Satellite Experiments Handbook 1990 edition	8X177	\$36.00
SOS At Midnight - APRIL	82209	\$9.40	Space Almanac - APRIL - 1990	8X298	\$36.00
			Weather Satellite Handbook - APRIL	8X214	\$36.00
<b>REFERENCE</b>			Weather Satellite Handbook Software only - APRIL	8X226	\$18.00
<b>VIDEO AUDIO EQUIPMENT</b>			<b>WIRELESS MICROPHONE</b>		
Electronics Data Book - APRIL - 1988	82337	\$47.80	All About VHF Amateur Radio - Oct - 1988	8X218	\$15.80
Motorola RF Device Data - 2 Volumes	82281	\$21.80	Microphone Handbook Vol 1 - RSGB - 1989	8X218	\$62.00
Radio Communication Handbook - RSGB	82347	\$22.10	Microphone Update Con. 1987 - APRIL	8X174	\$15.80
Radio Data Reference Book - RSGB - 1985	82296	\$20.40	Microphone Update Con. 1988 - APRIL	8X183	\$15.80
Radio Handbook 23rd edition - 8th Oct	82189	\$32.40	Microphone Update Con. 1989 - APRIL	8X221	\$21.80
Radio Theory For Amateur Operators - Swindon - 1991	82284	\$53.80	Microphone Update Con. 1990 - APRIL	8X175	\$15.80
	82285	\$36.70	Microphone Update Con. 1991 - APRIL	8X222	\$21.80
			Microphone Update Con. 1992 - APRIL	8X223	\$21.80
<b>HISTORY</b>			Microphone Update Con. 1993 - APRIL	8X224	\$21.80
200 Meters and Down 1936 - APRIL	82188	\$7.20	Microphone Update Con. 1994 - APRIL	8X225	\$21.80
50 Years of the APRIL - 1981	82188	\$7.20	Microphone Update Con. 1995 - APRIL	8X226	\$21.80
Big Cat - Autobiography of John Kous WJUK - 1979	82188	\$7.20	Microphone Update Con. 1996 - APRIL	8X227	\$21.80
Golden Classics of Yesterday - Ingram	MFJ300	\$16.50	Microphone Update Con. 1997 - APRIL	8X228	\$21.80
Sparks to Space - APRIL 75th Anniversary - 1980	82310	\$36.00	Microphone Update Con. 1998 - APRIL	8X229	\$21.80
			Microphone Update Con. 1999 - APRIL	8X230	\$21.80
<b>INTERFERENCE &amp; NOISE</b>			Microphone Update Con. 2000 - APRIL	8X231	\$21.80
Interference Handbook - Nelson - 1989	82181	\$16.00	Microphone Update Con. 2001 - APRIL	8X232	\$21.80
Radio Frequency Interference - APRIL	82188	\$9.40	Microphone Update Con. 2002 - APRIL	8X233	\$21.80
			Microphone Update Con. 2003 - APRIL	8X234	\$21.80
<b>MOBILE &amp; PORTABLE</b>			Microphone Update Con. 2004 - APRIL	8X235	\$21.80
Amateur Ferrite Complete Data Book	82044	\$5.90	Microphone Update Con. 2005 - APRIL	8X236	\$21.80
Design Notebook W1F9 - APRIL	82357	\$16.00	Microphone Update Con. 2006 - APRIL	8X237	\$21.80
Help For New Hams DeLuxe - APRIL	82358	\$16.00	Microphone Update Con. 2007 - APRIL	8X238	\$21.80
Hints and Winks 12th edition - APRIL	82330	\$14.40	Microphone Update Con. 2008 - APRIL	8X239	\$21.80
Novice Notes, The Book - APRIL GST	82298	\$10.80	Microphone Update Con. 2009 - APRIL	8X240	\$21.80
ORP Classics - APRIL GST	82323	\$21.80	Microphone Update Con. 2010 - APRIL	8X241	\$21.80
ORP Work Book - APRIL GST	82323	\$21.80	Microphone Update Con. 2011 - APRIL	8X242	\$21.80
ORP Work Book - APRIL GST	82323	\$21.80	Microphone Update Con. 2012 - APRIL	8X243	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2013 - APRIL	8X244	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2014 - APRIL	8X245	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2015 - APRIL	8X246	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2016 - APRIL	8X247	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2017 - APRIL	8X248	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2018 - APRIL	8X249	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2019 - APRIL	8X250	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2020 - APRIL	8X251	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2021 - APRIL	8X252	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2022 - APRIL	8X253	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2023 - APRIL	8X254	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2024 - APRIL	8X255	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2025 - APRIL	8X256	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2026 - APRIL	8X257	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2027 - APRIL	8X258	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2028 - APRIL	8X259	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2029 - APRIL	8X260	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2030 - APRIL	8X261	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2031 - APRIL	8X262	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2032 - APRIL	8X263	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2033 - APRIL	8X264	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2034 - APRIL	8X265	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2035 - APRIL	8X266	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2036 - APRIL	8X267	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2037 - APRIL	8X268	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2038 - APRIL	8X269	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2039 - APRIL	8X270	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2040 - APRIL	8X271	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2041 - APRIL	8X272	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2042 - APRIL	8X273	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2043 - APRIL	8X274	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2044 - APRIL	8X275	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2045 - APRIL	8X276	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2046 - APRIL	8X277	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2047 - APRIL	8X278	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2048 - APRIL	8X279	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2049 - APRIL	8X280	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2050 - APRIL	8X281	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2051 - APRIL	8X282	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2052 - APRIL	8X283	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2053 - APRIL	8X284	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2054 - APRIL	8X285	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2055 - APRIL	8X286	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2056 - APRIL	8X287	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2057 - APRIL	8X288	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2058 - APRIL	8X289	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2059 - APRIL	8X290	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2060 - APRIL	8X291	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2061 - APRIL	8X292	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2062 - APRIL	8X293	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2063 - APRIL	8X294	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2064 - APRIL	8X295	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2065 - APRIL	8X296	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2066 - APRIL	8X297	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2067 - APRIL	8X298	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2068 - APRIL	8X299	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2069 - APRIL	8X300	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2070 - APRIL	8X301	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2071 - APRIL	8X302	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2072 - APRIL	8X303	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2073 - APRIL	8X304	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2074 - APRIL	8X305	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2075 - APRIL	8X306	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2076 - APRIL	8X307	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2077 - APRIL	8X308	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2078 - APRIL	8X309	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2079 - APRIL	8X310	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2080 - APRIL	8X311	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2081 - APRIL	8X312	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2082 - APRIL	8X313	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2083 - APRIL	8X314	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2084 - APRIL	8X315	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2085 - APRIL	8X316	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2086 - APRIL	8X317	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2087 - APRIL	8X318	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2088 - APRIL	8X319	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2089 - APRIL	8X320	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2090 - APRIL	8X321	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2091 - APRIL	8X322	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2092 - APRIL	8X323	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2093 - APRIL	8X324	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2094 - APRIL	8X325	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2095 - APRIL	8X326	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2096 - APRIL	8X327	\$21.80
Radio Autocopy 2nd edition - John D Kous	82323	\$21.80	Microphone Update Con. 2097 - APRIL	8X328	\$21.80

# REPORT ON IARU REGION III CONFERENCE BANDUNG — OCTOBER 1991

RON HENDERSON VK1RH

**T**HE EIGHTH REGIONAL Conference of the IARU Region III Association was hosted by Organisasi Amatir Radio Indonesia (ORARI) in Bandung, Indonesia from 8 to 12 October 1991. The WIA was represented by Ron Henderson VK1RH IARU liaison officer, Kevin Olds VK1OK, Murray Kelly VK4AOK and Roger Harrison VK2ZTB. The WIA also held a proxy from the Solomon Islands Radio Society.

## Travelling to Bandung

We travelled separately to the conference by air, being met at Jakarta by members of ORARI. They collected travellers from the airport, conveyed them to a hotel for a rest break then on to the railway station for a three-hour train trip to Bandung. This rest break allowed a wonderful opportunity to discuss amateur radio informally with other delegates and hear their interests and concerns before the conference proper started.

## Conference Planning

On an initiative of the Directors all delegates, that is the leaders from each member society, met informally the night before the official opening to identify major issues, suggest possible committee and working party members, set the order of the agenda and identify a conference chairman. On this last point it has been the tradition for the host society to nominate a conference chairman to conduct the business meeting with support from the Association Secretary. ORARI nominated Sriwijaya or "Wid", YB0BNB, a GP who is also a qualified engineer. The host society's president, Barata YB0AY, was the Honorary Conference President and was responsible for all protocol, formal and social duties.

## Opening Ceremony

The conference was opened by His Excellency the Minister for Tourism, Post & Telecommunications, Mr Azwar Anas. The minister also signed an amateur radio first day cover and stamp featuring ORARI's logo.



At the IARU Region 3 Conference, Ron Henderson VK1RH was caught sharing a good joke with Larry Price W4RA, president of ARRL.

## Societies Represented

Following the official opening and morning tea the conference got down to business. Fourteen of the 24 member societies were represented and four proxies were held. The Bangladesh Amateur Radio League, BARL, and the Radio Society of Sri Lanka, RSSL, were present at a Region III conference for the first time and the Philippines, PARA was back after a six-year break.

## Conference Issues

The major issues of the conference, which had been advised through papers from member societies, were referred to working groups for detailed consideration. These included constitutional changes, finances, technical issues, promotion of amateur radio and amateur radio direction finding.

## Constitutional Changes

The WIA proposed a number of constitutional changes aimed to improve the management and operations of the

Region III Association. In the end our proposals (for limits to Directors' appointments of three tours each of three years or age 71, the renaming of the Chairman of Directors as Chairman and creation of a Treasurer) did not succeed. Nevertheless, the constitutional working party, on which Murray Kelly VK4AOK was our representative, carried out an exceedingly difficult task in the light of a "no change" stance from JARL and produced a consensus report with a number of recommendations. The least contentious of these were adopted, but some the WIA believed were key issues did not achieve the required 3/4 majority even with a secret ballot. This was not helped by one delegate taking the afternoon off for sight-seeing, thereby abstaining from voting!

Progress was made on a number of procedural matters including renaming the association "International Amateur Radio Union Region III". Procedures were revised to formalise the conference eve delegates' meeting, for all agreed it was very effective in "breaking the ice".

The Chairman of Directors was af-



**INTERNATIONAL AMATEUR RADIO UNION REGION III ASSOCIATION**  
The 8 Th Regional Conference. October 8-12 . 1991 .  
Savoy Homann-Bandung, Indonesia.

firmed the principal officer of the Association, but (in the WIA's view) not accorded the wherewithal to carry out that role.

### Regional Finances

Although IARU Region III is concerned with amateur radio policy and operating matters, the finances of the organisation always come in for considerable discussion. The triennium just past has been a difficult one financially, with additional travel for WARC preparation, both for IARU meetings and to promote amateur radio with national authorities throughout the region. The finance committee, on which Ron Henderson VK1RH was the WIA's representative, was faced with a paper from ORARI in which it sought some relief from subscription rate increases. The current subscription formula is based upon a sliding scale, with large societies paying considerably less for each additional member. ORARI and JARI are the largest two societies, yet they have very disparate national incomes. This becomes demanding on ORARI.

Another problem is the loss of a fair part of small societies' contributions in bank charges just to get the funds into the Region III accounts.

The committee considered a range of options and recommended that Directors examine several radical changes, such as a flat subscription rate per member, or even per licensed amateur, and report back to member societies.

In the end a three-year budget outlay program was agreed, priorities given to those outlays and a subscription rate

calculated to raise the required income. For the next three years our contributions go up three US cents per member and this will be absorbed in the 1992 fees. One key assumption is that membership numbers will hold steady at the present levels across the three years.

### Technical Issues

This conference was somewhat different from previous ones in that there were no really contentious technical issues. The considerable effort put into band planning at past conferences has paid off and provided Region III with generally accepted and agreed plans. Topics discussed in working party, which was convened by Kevin Olds VK1OK, included packet radio operating guidelines, HF beacon proposals, potential uses for additional bands and contest band segments. A number of the member societies contributed their packet guidelines and a composite set was generated. It is included in WIA News on p6.

Beacons have reached the stage where the 14/21/28MHz time-switched HF beacon series is being extended to include the 18 and 24MHz bands. Over the next few years we will need to give thought to establishing more time and power switched HF beacons. At present the initiative is coming from IARU Region II which is designing beacon controllers to help the project.

### Promotion of Amateur Radio in Developing Countries

The societies represented by IARU

Region III range from the very large to the very small, from the quite affluent to those with limited resources to devote to amateur radio. Several papers were submitted which either described actions to assist other societies or identified means whereby societies believed they could be helped. The conference set up a working party, of which Roger Harrison VK2ZTB was an active member, to provide some recommendations. Their proposal categorised the situation into three classes and proposed means to assist in each case. One observation was the supply of electronic parts, including ICs, was not always a problem; however there was a great need to adapt existing proven circuits to accommodate the locally available components.

### ARDF

Amateur Radio Direction Finding, or ARDF, is a growing sport not only in our region but world-wide. Two sets of provisional rules were examined and the preferred one from JARI adopted for the time being. A Region III committee, meeting by correspondence, was set up. The WIA has nominated Wally Watkins VK4DO, an active ARDFer, as our member.

### The Next Triennium

The conference concluded with elections and selection of the next conference venue. One Director, DD Devan 9M2DD, stood down, having as he said "reached the biblical three score and ten". Six nominations were received for five positions and, after a secret ballot, the four retiring Directors, David Rankin 9V1RH (Chairman of Directors), Keigo Komuro

JA1KAB, David Wardlaw VK3ADW and Fred Johnson ZL2AMJ were re-elected, together with Sangat Singh 9M2SS the new director.

The Secretary Masayoshi Fujioka JM1UXU, was re-elected unopposed.

The WIA bid for the next conference but was not successful so it will be held in Singapore in the middle of September 1994.

## Summary

In a report of this nature one can comment only briefly on the major points from the conference. In fact some 106 papers were submitted, copied to and digested by the delegates. Some, such as the beacon papers, will automatically go to the relevant areas in the WIA, in this example FTAC. A full list of all paper titles, or any particular paper, can be obtained through the Executive Office from the WIA's IARU liaison officer, Ron Henderson VK1RH.

As a final point, the WIA team, Ron, Kevin, Murray and Roger, wish to thank the Federal Council of several years past for their foresight in setting up the international representation fund which allowed this strong and effective WIA representation at Bandung.

ar

# REPEATER LINKING STANDARDS — INTERIM GUIDELINES

*At the 27 October 1991 meeting of the WIA Federal Council, a set of repeater linking standards was adopted as interim guidelines for Australian repeater linking. Based on a paper written by Bill Scott VK4XP, these interim guidelines are now published to invite comment before formal adoption as the repeater linking standards.*

*If you have any constructive comment to make about these guidelines, please write to:*

WIA Repeater Linking Standards  
PO Box 300

Caulfield South Vic 3162

Closing date for comment is 29 February 1992

## Details of Proposed Australian Standards

**P**roposed is a simple method which may be used as a standard way in which radio amateurs could gain access to repeater links in Australia.

The paper does not intend to define standards or protocols of how repeaters themselves should be interlinked. This remains the prerogative of the individual repeater groups. However, it sets out the ways the average radio amateur, with the minimum of extra equipment, can successfully operate repeater links anywhere in the country.

### Short Term and Long Term Plan

The standard is designed to address both the immediate and the long term. The methods of how an amateur would access the simplest repeater links or the most complex repeater links remain the same.

The standard also allows for growth. At first, repeater groups will probably build dedicated links between repeaters in a local area. Then, as this new facility develops and expands, more elaborate switching between repeaters widely separated geographically may also occur.

It is conceivable that, in the future, amateur satellites may even be used to provide links. And then the possibility exists for every repeater to be linked to any other repeater in the country, provided the necessary equipment is installed.

The standard proposed allows for this and, from the point of view of the ama-

teur operator, the way in which the link is made does not matter. It could be by UHF radio, cabling or satellite. Accessing and operating the link equipment would be independent of the method of linking used.

### Simply Dialling up a Number

The standard is based around simply dialling up the number of the other repeater, similar to using a telephone. Call the number of the repeater you want, using a keypad which can be connected on to any transceiver. Once "dialled", you will either have the link established to the repeater you wanted, or get a number-unobtainable tone if the connection cannot be made!

To clear-down all links, simply "hang up the phone" by pushing a button and sending the clear-down tones. It is that simple.

Once a link is in service there is a "musical" tone every one minute to tell you that you are linked up.

### Wireless Institute of Australia Involvement

Every repeater that has link capabilities would need a number, not unlike a short phone number. It is proposed that the WIA co-ordinate this, and that repeater groups contact the WIA to get a number for their repeater. The WIA would also be in charge of maintaining the standard to make sure it is uniform throughout Australia.



This quarterly publication, especially covering VHF, UHF and Microwaves, is essential reading for the serious VHF/UHF enthusiast.

The original is published in German by Terry Bitton, OHG, and the English language version is published by Mike Gooding, G6IQM.

1992 subscription rates are:  
Surface mail \$35.00  
Airmail \$48.00

Please forward your remittance to:  
VHF Communications  
c/- WIA, PO Box 300  
Caulfield South Vic 3162

Subscriptions must reach the WIA by 31st January 1992 to ensure you receive your first issue for 1992 on time.

Separate remittances for WIA membership subscriptions and VHF Communications please.

It could regularly publish lists of repeater identification numbers in the *Callbook* and *Amateur* magazines.

As well, it could be asked to review the standard from time to time, as changes to equipment and regulations occur.

The standard proposed is designed for use today under the existing DoTC regulations. It is, however, flexible and can easily be updated to handle any changes in the regulations.

## Easy to Buy Equipment

To access a repeater's linking equipment, an amateur would need a telephone-type keypad on the set. This is often called a Touchtone pad or DTMF (Dual Tone Multiple Frequency) pad. These are available on many sets as standard, or are easily fitted as a DTMF microphone.

If adopted, this standard allows for amateurs and groups to build up special tone-decoding equipment which can connect externally to the receiver, say through the extension speaker or auxiliary jack. With this equipment it would be possible to display the numbers dialled, showing which repeaters are currently linked. If a connection was also made to the microphone, abbreviated dialling facilities could also be possible.

One of the advantages of the proposed standard is that equipment manufacturers could mass produce equipment to meet the new standard, and so the prices and availability of this equipment should fall within the reach of every Australian amateur.

## How it Works

A quick reference "How to set up and close down a link" is included below and should serve to illustrate the method proposed.

### (i) To Clear Down any Link at any Time:

Command (from amateur) —  
Send tone 00#. That is, press PTT button and hold down. Then press the 0 key, press it again, then press the # key, and finally let go the PTT Button.

Response (from local repeater) —  
A short pip-pip when all links have cleared down

### (ii) To Link a Local Repeater to Another:

(eg, link local repeater 1234 to repeater 5678)

Command (from amateur) —  
Send tones 5678#. That is, "dial" the other repeater's number.

Response (from local repeater) —  
When the connection is made, a series

of short music-like DTMF tones will be heard.

These tones will be repeated every one minute the link is made and the repeater is in use.

(If the amateur had tone-decoding equipment installed, it would be possible to read these DTMF tones. For the example above they would read 3-1234-5678. The 3 means currently connected, the 1234 is the local repeater number, the 5678 is the other repeater's number).

If the connection takes a long time, a short pip is heard every one second whilst the link equipment searches for a connection path.

However, if an amateur "dials" up a repeater which cannot be linked to the local repeater, or the other repeater is timed out, a long beep will be heard. This is similar to the number-unobtainable heard on the telephone.

### (iii) Enquire is the Link Connected?

Command (from amateur) —  
Send tones 11#.  
Response (from local repeater) —  
Either a music-like DTMF tone sequence will be heard, or a short pip-pip. The musical tone indicates a link is already established, whilst the pip-pip means all links are closed down.

### (iv) Response Summary:

Pip every one second — connection being made, other end "ringing"  
Music-like tones — link in service  
Peep — link unobtainable  
Pip-Pip — all links cleared down

## Summary

This brief outline covers basically how the average amateur would operate a link. It is written in simple, non-technical terms and shows how easy it would be to operate any link in Australia, regardless of the linking method or the distance or bands involved.

Next is the more detailed technical standard which may be used by the groups which actually set up a linked repeater system. It is based around the Australian Standards Association style for standard writing and, as such, is rather practical and direct.

It is believed to be the most suitable approach to writing a standard, as it is well proven and readily understood.

## Australian Standard for Repeater Interlinking

### Scope:

This standard sets out interface requirements (protocol) that shall be used by an amateur station wishing to establish

link, clear down and have indications provided as to the status of a link or links from a local voice repeater to another voice repeater.

It shall pertain to all voice repeaters operating in any of the following modes: frequency modulation (FM) amplitude modulation (AM) single side band (SSB) phase shift keying use (PSK) with pulse code modulation (PCM) amateur television (ATV) sound only linear translators

This standard does not attempt to regulate the methods, protocols or standards by which the links themselves are established in the switching process. Nor does it attempt to regulate the methods used by "control" amateur stations which may switch standby equipment, change over to alternative power supplies, read equipment voltages etc.

This standard refers only to the methods of access by the "user" amateur from anywhere in Australia who wishes to establish or close a repeater link or links. It is a user-to-local repeater protocol rather than a local repeater-to-remote repeater protocol.

## Application:

This standard shall be applied to any single or multiple linked repeaters.

The standard shall be applied to any repeater, regardless of geographic location or method of linking or band of operation.

Mode examples include:  
FM repeater to FM repeater (single link)  
FM repeater to AM repeater (cross mode)  
ATV voice to FM repeater (cross mode)  
PSK/PCM repeater to SSB (cross mode)

## Administration and Revision:

This standard shall be administered by the Federal Technical Advisory Committee (FTAC) which shall put into place processes to regulate the application of this standard.

The standards shall be freely available to all radio amateurs who may implement it using any suitable technology.

FTAC shall not stipulate the technology and method of application that may be used. However, it may advise on certain known methods that may be adopted by an Amateur organisation wishing to establish linked repeaters.

FTAC shall, from time to time, review this standard in a consultative process with the appropriate repeater groups. The standard shall be reviewed at no greater an interval than 10 years.

The review dates shall be in the years 2000, 2010, 2020 etc.

Each review shall receive a new review number and date.

Once reviewed, FTAC shall effectively publicise the fact and be prepared to implement any retrospective changes in a co-ordinated manner.

## Publication:

All publications shall, at least, be in Amateur Radio magazine  
Australian Amateur Call Book

## User Access:

All access from the user commanding the local repeater to establish or clear a link or links to other repeaters shall be by the use of Dual Tone Multiple Frequency (DTMF) tones, often called Touchtones.

All status replies from a repeater as to the progress of a link request shall be by DTMF tones.

## Repeater Identification Number:

All repeaters which are capable of being linked to another repeater shall be identified by a four-digit unique number between 1000 and 9999.

This number shall be allocated by FTAC on a first-come, first-served basis. All numbers shall be sequentially allocated, commencing from 000 and prefixed by a number of the state. For example, in Melbourne 3002, in Brisbane 4082, in Kalgoorlie 6008 etc.

FTAC shall keep and regularly update a register of allocated repeater identification numbers. These numbers shall be regularly published at an interval of no greater than three months.

## User Commands:

The following commands shall be used to control a local repeater for the purposes of establishing or clearing a link to a remote repeater.

1. **Link Req.** To request a link connection from local repeater to a remote repeater the user shall send the repeater identification number of the remote repeater, in DTMF tones, followed by a hash (#). For example 1234#.

2. **Link Clr.** To clear down all links to and from the local repeater the user shall send tones 00, followed by a hash (#). For example, 00#.

3. **Link Enq.** To enquiries on the current status of links the user sends tones 11, followed by a hash (#). For example, 11#.

## Valid Commands

The command sequence shall be considered valid when it falls within the

following limits:

- Each DTMF tone must be longer than 50ms.
- Each tone must be less than three seconds.
- The total tone sequence must be of less than 10 seconds.

A link req sequence is not considered valid until a period totalling two seconds has elapsed since the last user input to the local repeater. Input to the local repeater is determined by loss of carrier and CTCSS tones, when used.

## Status Responses:

All command tones shall be re-transmitted on the local repeater. When linked, these tones shall also be re-transmitted on the remote repeater.

The following status responses shall be sent by the local repeater to a user after a valid tone sequence has been received and after all user input to the local repeater has ceased.

All status response tones shall be sent prior to any CW or other repeater ident signal.

All status response tones shall not be responded to or acted upon whilst the local repeater is timed out (due to fault or excessive user access) except the link clr command.

If a status response has commenced, it shall be completed before the local repeater times out.

Only valid tone sequences shall be responded to:

- Link Req.** Link request. Connections being established.
- Link Unobt.** Link unobtainable. Link cannot be established.
- Link Est.** Link established.
- Link Dis.** All links disconnected and cleared down.

**Link Req.** Link request. Connection being established.

This sequence of tones shall be sent to the user on the local repeater after a valid (possible) link to another repeater may be established and the equipment is in the process of establishing the link.

It shall consist of a 200ms duration transmission of DTMF tone 1, repeated at one-second intervals, for a maximum period of 10 seconds.

It shall cease on:

- (a) the link connection being established,
- (b) the link unable to be established, or
- (c) another valid tone sequence being received.

**Link Unobt.** Link unobtainable. Link cannot be established.

This sequence of tones shall be sent to the user on the local repeater after a valid link to another repeater cannot be established, and the equipment has abandoned

and closed down the linking process.

It shall consist of a 1000ms duration transmission of DTMF tone 2.

**Link Est.** Link established.

This sequence is sent to the user on the local repeater immediately the link to a remote repeater is established. Link est tones shall also be sent every one minute thereafter whilst the local repeater is transmitting and the link is in use.

All status response tones shall be sent prior to any CW or other repeater ident signal.

All status response tones shall not be responded to or acted upon whilst the local repeater is timed out (due to fault or excessive user access) except the link clr command.

If a status response has commenced, it shall be completed before the local repeater times out.

Only valid tone sequences shall be responded to:

- (1) **Link Req.** Link request. Connections being established.
- (2) **Link Unobt.** Link unobtainable. Link cannot be established.
- (3) **Link Est.** Link established.
- (4) **Link Dis.** All links disconnected and cleared down.

**Link Req.** Link request. Connection being established.

This sequence of tones shall be sent to the user on the local repeater after a valid (possible) link to another repeater may be established and the equipment is in the process of establishing the link.

It shall consist of a 200ms duration transmission of DTMF tone 1, repeated at one-second intervals, for a maximum period of 10 seconds.

It shall cease on:

- (a) the link connection being established, or
- (b) the link unable to be established, or
- (c) another valid tone sequence being received.

**Link Unobt.** Link unobtainable. Link cannot be established.

This sequence of tones shall be sent to the user on the local repeater after a valid link to another repeater cannot be established, and the equipment has abandoned and closed down the linking process.

It shall consist of a 1000ms duration transmission of DTMF tone 2.

**Link Est.** Link established.

This sequence is sent to the user on the local repeater immediately the link to a remote repeater is established. Link est tones shall also be sent every one minute thereafter whilst the local repeater is transmitting and the link is established.

The link est tone sequence shall also be sent in response to a link enq command sequence, and the one-minute interval shall be reset.

- The link est tone sequence consists of
- (a) tone 3
  - (b) the repeater identification number of the repeater through which the link req command was sent
  - (c) followed by the identification number of the repeater to which the link was requested
  - (d) 100ms pause (if necessary for multiple links)

For example, a link req was made through repeater 1234 to link to repeater 5678. The link est tone sequence would consist of the tone 3 12345678.

Each tone is to be of 50ms duration. The total would then be of 400ms.

Should more than two repeaters be linked, then the sequence would be extended with a 100ms pause between sequences. For example, a user at repeater 9012 successfully linked to repeater 1234, after a link had been previously established with 5678. Therefore the sequence would be, 3 12345678 <100ms pause> 90121234.

**Link dis.** All links disconnected and cleared down.

This sequence is sent to the user of a local repeater after all repeater links have been cleared down. This tone sequence shall also be sent in response to a link enq command sequence.

It shall consist of a transmission of tone 4 for a duration of 200ms, followed by a pause of 100ms, followed by a further transmission of tone 4 for a duration of 200ms.

## Operations:

Whilst the repeater is establishing a link, normal repeater operations shall continue. If a local repeater times out, the link est tones shall not be sent, but the link shall remain established.

If a remote repeater is timed out when a link req is made, the link shall not be permitted to be established until the remote timeout has cleared.

Link est tone shall also be transmitted on the remote repeater or repeaters simultaneously with the local repeater. Other status tones shall not be transmitted on the remote repeater or repeaters.

Whilst a repeater is linked to another, it shall continue to operate as a repeater, with re-transmissions on its assigned output frequency for a correctly received input signal and with timeout functions enabled.

All local input to a repeater must override all linked input from a remote repeater or link equipment.

Where a change of link status has occurred whilst a repeater is in local use, the tones used to indicate the new status shall be stored and re-transmitted.

## CTCSS Tones for Interference Suppression:

To reduce the interference caused by adjacent services, some repeaters may be fitted with CTCSS sub-audible tone decoder equipment. Each repeater fitted with CTCSS decoders for interference suppression shall have three decoders on the frequencies of 123Hz, 141.3Hz and 162.2Hz fitted.

When in use, the local repeater equipment shall consider that both the COR and one of the CTCSS sub-audible tones listed above are present before a correct access to the local repeater and subsequent link can be established.

## CTCSS Tones for Link Permissions:

Some users are not permitted to have their transmissions re-transmitted via a link from another remote repeater, due to licensing limitations. Typical examples include novice licensees on 6m or 70cm and limited and novice licensees on HF repeaters.

Those who are permitted shall use CTCSS tone 141.3Hz to accompany all transmissions into a local 2m, where the user expects re-transmissions from a remote repeater on the 6m band and UHF and higher bands.

And where the user expects re-transmissions from a remote repeater on the HF band, use shall be made of CTCSS tone 162.2Hz to accompany all transmissions into a local repeater.

In all cases, the remote repeater shall consider that the appropriate CTCSS tone is present at its link input before the subsequent re-transmissions on that remote repeater can occur.

Where multiple repeaters are linked, the CTCSS tone requirement shall apply only at link input to those repeaters on which licence violations are to be restricted.

## Tone Levels:

All transmissions and re-transmissions of DTMF tones shall be at 50 percent of the maximum voice level for that mode of transmission.

All CTCSS (sub-audible) tones shall be at 10 percent of the maximum voice level for that mode of transmission.

## Auto Clear Down:

Where a repeater licensee chooses, and in all cases where more than three repeaters are linked simultaneously, the repeater links shall have an auto clear-down circuit in operation.

The auto clear-down shall occur if no input is received within 20 seconds on

any of the repeaters linked at that time. This process shall cause the most recently established links to be cleared successively in the opposite order from which they were established until a maximum of three repeaters remain linked.

A link enq response shall occur on all repeaters that were linked, prior to the auto clear-down operation occurring, to indicate to users the new link status.

## Auto Link Requesting:

Where a repeater licensee chooses, auto link requesting circuits may be in operation. This circuit shall re-establish links to a maximum of three repeaters, if no input is received on a nominated repeater within 20 seconds.

If an auto link request was not successful, due to operations of other repeaters or link equipment, it shall not be repeated within one hour.

A link enq response shall occur on all repeaters that were not linked, prior to the auto link requesting operation successfully re-linking them, to indicate to users the new link status.

## Typical Questions and Answers about Australian Repeater Linking Guidelines

Will Scott VK4XP

**Question 1:** How can I use the standard linking commands to set up links with three repeaters simultaneously?

Linking to many repeaters is as simple as linking to only one repeater. Imagine your local repeater is 2233 and you wish to link to 1234 and also 5678.

First establish the link with one of the other repeaters, say 1234, by sending 1234#. The repeater will respond with a music-like tone sequence 3-2233-1234.

Next make the link with the second repeater by sending 5678#. The local repeater will again respond with a music-like tone sequence of 3-2233-1234-5678.

You are now linked to three repeaters simultaneously.

Every one minute you will hear the same music-like tone sequence, so you and amateurs on other repeaters can tell the link is set up. To clear all links down, send 00# and the repeater will respond with a short pip-pip to indicate all is clear.

**Question 2:** How did the repeater numbers come about?

To identify each repeater's "phone number" numbers had to be found that



would make it easy to use, and that no two numbers were the same. The repeater numbers are arranged so the state is the first part, and a simple serial number is the second part.

An example is the first repeater registered in Victoria would be 3001, next would be 3002. The standard calls for the WIA to circulate lists regularly. (Alternative — nearest postcode).

#### **Question 3: Why are three sub-audible (CTCSS) tones used?**

These tones have two purposes and are used only when necessary. Repeaters that do not need them are not fitted with them.

The first purpose is to reduce interference from other services on radio sites with lots of radio equipment in the close vicinity.

The second is to exclude certain holders of amateur licences from being accidentally re-transmitted on a linked repeater they are not permitted to use.

The tones set out in the standard effectively say that:

Novices use tone 123Hz only when repeaters are wired for interference suppression.

Limited calls use tone 141.3Hz both for access to 70cm and other repeaters from 2m, and for interference suppression.

Full calls use tone 162.2Hz both for access to 10m repeaters from VHF or UHF repeaters, and for interference suppression.

This way a radio amateur has to install only a single tone CTCSS card for access to all repeaters, in any band, in Australia.

#### **Question 4: How much does it cost?**

Generally the cost is very low. The basic intention is to make sure a suitable Australian standard can be established at minimum cost to the amateur, but be easy to use with readily available equipment. Because of this, some repeaters may be a little more complex, but they make it easier and cheaper for you to use.

The first thing you will need is a DTMF microphone, which is used to turn links on and off. It runs out between \$30 and \$60 for a new microphone or a keypad.

In a limited number of cases, where repeaters on other than the 2m band are involved, you will also need a CTCSS board. This small board is installed in your radio and is about the size of a postage stamp. This board will need to be set up on one of the three standard CTCSS tones, depending on your licence. Cost runs out about \$40, with installation costs extra

**Question 5: As a club, which CTCSS tone decoders should we install in our repeater for interference suppression?**

You should install all three Australian standard decoder cards and wire them all in parallel. This would mean that any one tone would access the repeater.

The cost to you as a club is a little higher than for the individual. But for the amateur community as a whole, it is cheaper to install three decoders in each repeater with interference problems, than to have two or more encoders in each amateur transceiver.

#### **Question 6: What about my rights to determine if and when I wish to have my transmissions links to another repeater?**

This is catered to by the standard. Firstly, if you wish to know whether a repeater is linked to another repeater, simply send the link req tone sequence of 119. The reply will be either a pip-pip which means there are no links in service, or a musical tone sequence, indicating a link is established.

Next you may at any time clear all links by sending 00#, and a pip-pip will be heard indicating all clear.

Finally, if you are in the middle of a contact and another station using a remote repeater links into your local repeater, you will hear the link req tone sequence as the link is established, and then every one minute you will hear the musical tone sequence to indicate a link is up.

At no time, therefore, will you be "in the dark" as to what the status of the linking is, and always you will have the opportunity to clear down all links by sending the 00# tones.

#### **Question 7: The DTMF tones will be easily heard and encourage "phantom button pushing".**

Unfortunately, any repeater is open to abuse, and most people agree that, if methods can be adopted which reduce this abuse at a reasonable cost, they should be employed.

For linking purposes, the CTCSS tones are sub-audible and normally should not be heard. The DTMF tones, however, are required to be heard so you can work out what is happening with the linking equipment.

Not every station will be in a position to have tone decoding or similar equipment, to read high-speed signals coming from the repeaters, telling you what linking is taking place. So the simple solution is that stations must simply listen to the tones and read them by ear.

The tones you are required to recognise, like the telephone, are if a link is

established (music link tone sequence), if a link is trying to be established (pip every one second), if a link cannot be established (long beep), or if the link is clear (pip-pip).

Future revisions of the standard, as the technology becomes economically available, may make use of high-speed ASCII burst type of tones, which are less attractive to button pushers and less annoying to the general user.

#### **Question 8: What is auto clear-down and why is it required?**

Auto clear-down is an automatic process that a club may place on its repeater linking system. It will disconnect a link if no-one uses it and leaves it idle for a while. The standard recommends if this is employed auto clear-down should occur after a period of 20 seconds of no use.

The DoTC requires that, for permanent linking, a maximum of three repeaters may be employed, and that to link more than three repeaters, temporary links must be used. That is, it is permitted to selectively link more than three repeaters together for a limited period of time.

To satisfy this requirement, the linking standard calls for auto clear-down of one or more repeater links when more than three repeaters are linked together. The clear-down would bring the links back to three repeaters or less, but only on completion of a contact.

This should occur if there is a period of no use for a maximum of 20 seconds. The links should clear down in the reverse order of being established.

As well as this, the standard calls for a link status to be broadcast over each repeater when a change occurs.

#### **Question 9: How will changes to the regulations and improvements in technology affect the standard?**

Naturally it will depend on the particular change in question. Generally speaking, any standard should be flexible enough to withstand the tests of time, and should not get you into a corner you cannot escape from in the future.

The Australian Linking Standard proposed is firm enough to give long-term guidance, whilst being flexible and able to adopt new technology as methods as they become available. If a review has not occurred within a certain time period (10 years), the standard calls for an automatic update.

#### **Question 10: As a club, we should always retain the right to switch the repeater linking on and off. How does the standard cater to this?**

# A CENTURION AMONG US

A PROFILE OF HARRY ANGEL, VK4HA  
DAVID JONES VK4KLJ

The standard is designed to cover access by an amateur station to the local repeater only. That is, only the tones that would be sent and received by the user amateur are regulated in the standard.

As a licensee of a repeater you do, indeed, have the right of control to switch a repeater and links on and off when desired. What tones or methods you employ to do this are not covered by the linking standard. You may use any appropriate method you wish.

Similarly, the standard does not cover how your repeater establishes its link with another repeater. This again is your prerogative. The standard simply says that if a user requests a link, and linking is possible, that your repeater provides it using the method most suited to your needs.

However, it is important to recognise that, in all cases, the users too have the right to close down a link if they do not want their transmissions to appear on another repeater. All "permanently" linked repeaters must be able to have the links cleared by a user amateur. (See also question 11 below).

## Question 11: How and where is auto re-linking used?

Where repeater licensee/s require that a chain of repeaters normally remain in a linked state, the establishment of those links is by the same method described in question 1.

Similarly, the links must be able to be disabled using the 008, the link clear-down tones.

But, if the licensee/s want to have the repeaters normally linked, the repeater system may automatically re-establish the link using an auto link req, once a user has completed the contact. This is usually after 20 seconds of no further input.

If the auto re-linking fails on its second attempt, auto re-linking must not attempt another link req for one hour.

## Question 12: How long will it take to implement this proposed standard?

It is suggested that a five-year period be used to change over any existing repeaters and links not complying with the standard.

This will allow an adequate time period to replace existing equipment as it simply "wears out" or requires routine maintenance.

AR

**Help stamp out stolen equipment — keep a record of all your equipment serial numbers in a safe place**

**J**UST ON 100 YEARS AGO, there came into the world one Harry Angel, the first of a family of seven children. Born in Essex, UK,

Harry's early interests were as a mariner. With a bit of larrikin in him, a strength which he still displays today, Harry challenged the worst that old Mother Nature could do. He crewed on an oil tanker to Philadelphia, then took a four-masted barque, the "William P Fry", around Cape Horn to San Francisco. So rough was it in rounding the Cape that Harry was washed overboard, only to be washed back on a few minutes later! Then he crewed a windjammer to Sydney, a voyage which took some three months. Some time later, he returned to the sea as an Able-Bodied Seaman, crewing on many an ocean-going cargo ship. During his service in the Merchant Marine, Harry travelled all over the world, twice visiting the U.K.

When war was declared, Harry joined the AIF, enlisting with the First Division. He was among those who landed at Gallipoli. After service, he returned as a Recruiting Sergeant, finally settling in Queensland as a transporter/carrier/driver after the war.

With exposure to mechanical and electrical devices, Harry rapidly rekindled his interests in the developing medium called radio, something he was first exposed to in the Merchant Marine. He established Angel's Radio Service, based at St Lucia in Brisbane. This commenced in the early 1930s, and continued with his XYL Rebecca until she passed away in 1973. But the radio bug had bitten! It wasn't long before Harry decided that receiving was too small a part of the whole picture — how about experimenting with transmitters and antennas? So, in 1935, Harry sat for his AOCPP, and subsequently devoted the rest of his life to pursuits in radio and electronics. His list of achievements reads like a glossary of terms, with numerous awards and certificates, including DXCC, all using home-brew equipment.

Harry's family life has been shared with his children, their children, and their children's children. He and Rebecca

had two sons, Ron and Harrold, and a daughter Lillian, with whom Harry now lives. Ron gave Harry two granddaughters, Robyn and Delma, who between them gave him five great-grandchildren.

Harrold gave him two grandchildren, Brian and Henry, who also gave him great-grandchildren. Lillian gave him two grandchildren, Fay and Robert, and between them, they've given Harry six great-grandchildren, twins Rechelle and Tamara, Tegan, Matthew, John and Tanya.

So now you know a little about the man behind the smile, Harry Angel VK4HA. On 14 December, Harry will celebrate his 100th birthday. He's planning to be active on 40m, and the Queensland Division would like to encourage all Harry's friends to give him a call on the Coral Coast Group Net, at 8am EAST, on 7060kHz. If you can, send him a birthday card, just so you can wish him happy birthday yourself. Please send it to Harry's Birthday, c/- GPO Box 638, Brisbane, 4001, so that it's received by the 12 December. You know Harry just could be the oldest living amateur, full stop!

So Happy 100th Birthday, Harry Angel VK4HA.

DAVID VK4KLJ  
AR



# FROM RUSSIA WITH LOVE

JOHN MAHONEY VK4JON  
PO BOX 194, DUNSFIELD 4860

**W**ELL, THAT'S HOW THE local newspaper headlined the article when it published Musa's photos, but there's more to it than the title of a novel.

It started out as a simple computer problem. How do I access the escape codes on my printer? My KYL introduced me to a teacher at the Innisfail High School who taught maths and something called "Information Processing and Technology", Stan Robertson. When Stan found out I was a radio amateur, all thoughts about printer codes went out the window. He enlisted my help in his course. "Er, John," he said, "amateur radio would be a good way of teaching my year 11 class about IPT." (No prizes for guessing which high school now has the callign of VK4IHS).

At first I made an attempt to organise a contact with a secondary school in Japan. A letter was drafted, then sent to an interpreter to be copied into Japanese characters so that both English and Japanese versions could be sent to the JARL. To date no reply has been received, but I did ask for a school that could speak English.

When I saw in the Amsat newsletter an offer to schools in Australia to have the opportunity to contact the American astronauts on board STS-39, I jumped at it. We all know the results of that, but we had a go. A phone call to Maggie VK3CFI to find out if we were the mugs led to an attempt to contact U2MIR on packet. It took a few orbits to organise, but finally the big day arrived when the students from Innisfail High were to have a QSO on packet radio with a Russian spacecraft. You wouldn't want to know about it! Murphy was around, so no QSO. Still, not every experiment works. I was able to contact U2MIR when no-one else was here, so I uploaded some questions the students gave me, and next day had the reply. By now, Musa and I had almost a regular skeed going. I gave him some dates from which to choose one suitable for him and, on 1 May, had a shack full of teachers, parents, students and a neighbour with a video camera. Results? Murphy still lives.

Two days later we had another go, and this time contacted Musa by packet and voice. We were the third school in the world to do this. The first was Maggie VK3CFI, with students from the school



Participants at Innisfail High School (from left) John Mahoney VK4JON, Stan Robertson (science teacher), Glen Jacobson, Jodie-Lynn Bryce, David Plath, Rickie Philp and Paula Robinson. (Courtesy Innisfail Advocate)

at which she teaches in Colac, and the second, I understand, was in France.

The gear was nothing fancy. Just a Kenwood TM221A with a half-wave vertical antenna at about 30ft.

Everyone who wanted one, got a copy of the video. The Innisfail newspaper gave us excellent support, as did 4KZ radio. The Queensland Education Department helped us with a news release, so for a while we had more phone calls than we could cope with.

Just a few days ago interest was rekindled by the arrival of a short letter, a QSL card and three photos from Musa. We had sent him a copy of the video, a QSL card signed by the students and teachers, and all the newspaper cuttings I could lay my hands on. His reply is dated 24.8.91. The card etc was placed in a Russian envelope and then put into another envelope which was stamped and postmarked in Japan. It arrived sometime while I was on holidays at the end of September. (Musa's home call is now UV3AM — Ed).

As a result of these endeavours, Innisfail High School now has an amateur radio club with its own call. Stan is studying for his limited licence so the school club can operate without external assistance. They will have to put up with me for the moment, but that won't be a prob-



Autographed photo of Musa Manarov.

The Russian handwriting translates as "(To) John VK4JON OM, (from) Musa Manarov U2MIR. (In) good teaching. (signature) 24.08.91." (Courtesy Musa Manarov)

lem until they can get some equipment. By then, he'll be qualified. In the meantime, how does this printer work, and where are these other satellites ....? ar

# SURPRISE PARTY FOR PIERCE HEALY VK2APQ

**T**O CELEBRATE THE 80TH birthday of that well-known amateur, Pierce VK2APQ, a host of long-time amateur friends, plus relatives and neighbours, gathered at the Cataract Park Scout Camp on Sunday 18 August. It was a great day, and one that obviously came as a very genuine surprise to the guest of honour. For once Pierce was stuck for words. He was with people he had not seen for goodness knows how many years. Many had travelled for hundreds of kilometres to join with Pierce on this special event. There were also scores of apologies from people who could not be there for many reasons, the main one, of course, being travelling distance. Many of these were interstate friends.

Among those present were George Pile VK2GP, Phil Watson VK2ZPW, Syd Molen VK2SG, Bill Hall VK2XT, Alan McLeay VK2PII, Bill Storer VK2EG, John Cannon VK2NJC, Roy Parton VK2KO, Sid Ward VK2SW, Chris Cowan VK2PZ, Norma Stanley VK2BNS, Tony Mulcahy VK2ACV. Many of the above amateurs had their wives with them. On a quick count-round among the amateurs present, it was found there was a total of more than 500 years of active amateur radio involved.



*Left to right: Sid VK2SW, Pierce VK2APQ, Roy VK2KO, Bill VK2EG*

Bill Hall and Chris Cowan took out the honour of being the "longest on the air", with each boasting 61 years licensed AR to his credit. Hot on their heels was the guest of honour with 52 years, and Syd Molen with 47 years.

It was a great day and one for which Pierce's daughter Pat and family, who organised things, can be justly proud. See you on your 90th, Pierce. Congratulations on the 80th.

**SID WARD VK2SW** *ar*

## BOOK REVIEW

### *On Ultra Active Service*

by Geoffrey St Vincent Ballard

REVIEWED BY JIM PAYNE VK3AZT

This book tells the gripping and hitherto top secret story of the Australian Signals Intelligence effort during WWII. Ballard was one of the elite few who had access to the material produced.

The story travels with Special Wireless sections through Greece, Crete and Syria where Axis communications were intercepted. The story then shifts back to Australia, and covers training in Kana (Japanese Morse). Interception and code-breaking methods are detailed and interspersed with brief unit histories,

poems, photographs, personal anecdotes and references to the important roles played by the women's services. Sigint required close co-operation with other British and US forces in the SWPA and SE-Asian theatres, and some of the narrative makes fascinating reading. Ultra was the top secret codeword for intelligence derived from enemy high grade cyphers.

This large book, with colour illustrations, is available from Mr Steve Mason, 2/18 Kasouka Rd, Camberwell Vic 3124, phone (03) 882 6735, price \$50. *ar*

# BOOK REVIEW

## *The Magic Spark*

### *50 Years of Radio in Australia,*

R R Walker

ISBN 7256 0116 7

THE HAWTHORN PRESS, MELBOURNE, 1973

Subject: History of Commercial Radio in Australia, 1923-1973

This book of 192 pages and A5 size chronicles the development of commercial broadcasting in Australia from its beginnings in 1923, largely initiated by amateurs and budding entrepreneurs, through to the 1970s domination by large corporations and, of course, the ABC network. The book has limited technical information and concentrates on the personalities who developed commercial radio stations as well as details of the careers of well known presenters, but it does have some interesting historical snippets concerning the extensive amateur involvement in early wireless broadcasting.

Although amateurs "broadcast" musical and classical items and AWA sent out "wireless concerts" in the early '20s, the first official broadcast was from station 2SB in November 1923. 2SB (which was later changed to 2BL because the original call sounded like its rival 2FC) was operated by Broadcasters (Sydney) Ltd with an amateur licensee, WJ MacLardy

2HP, as a major shareholder and operator. He was also the publisher of *Wireless Weekly*. Other amateurs mentioned in the book include C V (Pa) Stephenson 2IV, who started 2UE (originally 2EU after his business Electrical Utilities), Harry Douglas 2HD (Newcastle) and Edward Gold 4GR (Gold Radio, Toowoomba).

The book has a number of black and white photos and an appendix which lists all commercial licensees since the inception of broadcasting up to 1973.

The book was released in 1973 to coincide with the celebration of 50 years of commercial radio.

Original price of the book was \$5.95, and it currently sells for \$5 to \$10 on the secondhand market. **VK2DYM**



BT

# amateur. radio action

“ Ηουσε αδωερπισεμεντ Π φορ Αματευρ  
Ραδιο Αχτιον μαγαζινε το αππεαρ ιν  
ΩΙΑ φουρναλ Αματευρ ΡαδιοΠι.”

For subscription details to just  
about anywhere, phone Grant  
Manson on (03) 601 4222

*If all this looks Greek to you, perhaps it's because you're not  
reading the authoritative source — Amateur Radio Action  
magazine... at your local news outlet every fourth Tuesday.*

Continued on page 35

# Radiochess

BY VINCENT LUCIANI K2VJ  
218 W REVERE AVE  
NORTHFIELD NJ 08225 USA



**I**F YOU WERE TO DISCUSS THE America's Cup with other than ham radio operators, you would surely be discussing sailing ships.

But if you were to read "America's Cup" within these pages, you would do well to suspect amateur radio, because what we are really talking about is the America's Cup for Radiochess, an international sport twice conducted on the ham radio bands.

Radiochess, you see, is a thriving spinoff from our amateur hobby, one you might like to know about if you enjoy chess, no matter your skills. After all, most of us have a less than keen awareness of the game's sometimes astounding collection of titled niceties. But, not to worry—there is always someone to cheerfully assist learners while beating them at a match.



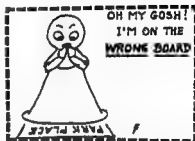
CARI - Chess & Amateur Radio International - was formed in 1981 as the vehicle by which to enable chess-playing hams to find a companion on the bands. Over the years, CARI - the longest-running radiochess organization in the world - has sponsored nets, matches between schoolkids across the US, and even between chess clubs in different countries.

Peeking earlier at approximately 350 members from 15 countries, members stay in touch via its official publication, *CARI News*, which lists chess nets and also correspondence from members including descriptions of their over-the-air games, invariably those they've won.

Non-hams have also joined CARI. With the advent of novice SSB on the 10m DX band in the US, the enticement has been great and many have since become licensed.

The new US no-code licence may also help because there are several who enjoy their radiochess on 2m repeaters. It is all a matter of finding someone for a game - which is, and was, the original CARI motivation.

On the "America's Cup for Radiochess" thing, the Aussie-New Zealand team won the first meet, US the second, in a tie-breaking game that began on 20 metres, went on for eight hours, ending up on



40m. They still talk about it as a pace-setter for ultra-conservatism in chess.

CARI President and newsletter editor/publisher John Doud, WF1L, himself a master chess player and noted CW op, (he handles 40wpm manually in QSO) provides newcomers with a sheet that explains how to send moves over the air either by voice or CW. One game makes you an expert in its application.

If you like chess, and if you like ham radio, the melding of these two fine hobbies invariably sets up a chemical reac-



tion to participants that is highly pleasing and rewarding.

Good luck. Watch out for the deadly, heart-stopping, "queen on delta seven takes knight on delta four. Check mate!"

CARI membership is a mere \$US10 per year. Simply send cheque made payable to: John Doud WF1L, 22 S Athol Rd, Athol, MA 01331, USA. Send SAE & IRC to obtain information on sending moves, etc. Also, be sure to give name, QTH, licence class, bands and modes, for many are now enjoying radiochess by packet.



## FT-767GX BASE-STATION MULTIBAND TRANSCEIVER

The FT767GX is the **ONLY** transceiver that offers such a high level of performance on all HF amateur bands, as well as on the 6m, 2m and 70cm bands. Features include all amateur band coverage from 1.8 to 440MHz (100W max HF, 10W max VHF/UHF), all mode operation on all bands (SSB, CW, AM, FM, FSK), HF receiver covering 100kHz to 30MHz with up to 104dB dynamic range, inbuilt automatic HF antenna tuner, digital wattmeter and auto-calculating SWR meter. Also includes handheld MH-1 microphone. Cat D-2935

HF, 6m, 2m, 70cm

**SAVE \$200 \$3295**



**2 YEAR WARRANTY**



**LIMITED STOCKS**

## FC-757AT AUTO ANTENNA TUNER

A quality HF auto antenna tuner designed to provide all the antenna switching matching and metering requirements of the modern amateur station. Designed for the FT 757GX series which provide automatic band switching. It can also be powered by an independent DC source and used with any other 100W HF transceiver.

The microprocessor allows fast, impedance matching using a modified pi-L network with a power handling of up to 150watts. An inbuilt 100 watt dummy load is provided along with an in-line RF Wattmeter and auto calculating SWR meter.

### Specifications

Freq. Coverage	All HF amateur bands (1.8 - 30MHz)
Matching Range	25 to 100 ohms (1.8 - 2.0MHz) 10 to 250 ohms (other amateur bands)

Cat D-2942

**\$699**



## FC-700 ANTENNA TUNER

An ultra compact antenna tuner designed for operation on the 80-10 metre amateur bands (including WARC). The Yaesu FC-700 offers outstanding performance and unbeatable reliability. It includes a built-in SWR and power meter (15 and 150 watt scales) and internal, se cable 50 ohm 100W dummy load. Provides a 50 ohm load to the transceiver when the antenna impedance is within the 10-250 ohm range.

Cat D-2917

**SAVE \$30 \$299**

## FT-290RII 2M MULTI-MODE TRANSCEIVER

The all-mode transportable transceiver for serious field or mobile operations! The FT-290RII features FM, SSB (USB/LSB) and CW operation with 2.5W or 250mW switchable output power, twin VFOs and 10 memories that store mode and simplex or repeater frequencies. Selectable tuning rates are provided for SSB/CW and FM, while mode specific features such as a noise blanker and clarifier control for SSB/CW, plus

a full set of functions for FM repeater operation make these units very simple to operate. Each unit comes with a FBA 8 battery holder for nine C size standard or NiCad batteries (not supplied), antenna, and handheld microphone. The FT-290RII with flexible rubber antenna covers 144-148MHz.

Cat D-2875

**2 YEAR WARRANTY**

**\$699**

**DICK SMITH  
ELECTRONICS**

### MAJOR DICK SMITH ELECTRONICS AUTHORISED STOCKISTS:

**NEW ARMADALE:** New England Electronics 21/65 BALJURA, Balina Electronics 86/222 BATEMAN'S BAY, Baycity Sight & Sound 25/20 BERMAL, OZTECH Electronics 93/42 BOWRAL, Bowral Electrical Supplies 51/1000  
**BROKEN HILL:** Hobbies & Electronics 88/308 COOTAMUNDRA, Cootamundra Music & Lite 42/2561 CORPS HARBOUR, Coffs Harbour Electronics 12/464 DENILQUIN, Deni Electronics 61/3672 DUBBO, Chris & Co 82/8711  
**FORSTER:** Forster Village Electronics 60/100 BOURN, Lynette 22/1388 SA5006 GRAFTON, Naps & Soanes 42/191 GRAFTON, Multiplex 62/434 MARELLA, Mares Electronics 22/621 KEMPSEY, PBL Leonard 63/134 LEE TON  
**GLADSTONE:** 55/000 Light Trims NIDEE, Lightning Ridge Newsagents 29/5 3 17/4509 Doonry Photocopying 51/113 1/2 SHORE, Doro Electronics, Sensors 21/4131 MUREE, Muree Electronics 52/201 MILDREE  
**HEADAROE:** 73/895 MURWILLUMBEA, Strings & Things 23/684 NARRABRI, Numa Computer Services 92/21 4 NELSON BAY, Nelson Bay Elec & Hobbies 81/3665 NOWRA, Noma Electronics 21/022 PARKES, Stud Music Ctr  
**62/356 PORT MACQUARIE:** Hastings Computer Service 80/4574 RICHMOND, Simon G 078 178/0110 CLADUNA, Looze Electronics 55/949 WAGGA WAGGA, Philips Electronics 21/658 WELLINGTON, Wellington Service  
**45/235 WINDYBUSH:** Simon Griffiths 716/22 YASS, Warrington Electrical 25/116 YOUNG, Ken Douglas Electronics 62/129 WIDEBAR, APARAT, Jerran Electronics 52/345 WARRAGAL, JHB & Co 62/402 5257 BENALLA, North East  
**Electronics 52/210 COLEB, Cole Electronics 11/2647 KILBURR, Australian Auto Pro 22/2882 SHEPHERTON, Andrew Gwyn Electronics 21/440 SWAN HILLS, Ryan Design TV Service 32/800 TUGGERAH, Tuggerah Electronics  
741/699 WARRAGUL, Royline 23/425 WARRANBOOL, Koro Electronics 62/7417 QLD AYR, Delta Electra 83/1566 BOWEN, Delta Agencies 86/347 BUNDABERG, Bop Elen Electronics 52/785 CAULDRON, Electromart  
81/833 DYSART, David Videotronics 58/2 07 GLADESTONE, Electronic Enterprises 72/660 INDRAM, Moxon Electronics 76/188 MANRILLA, Interlink Hk 61/2024 M KERRY, MD & MM Siegel 62/455 MACKAY, Shivers  
**Electronics 11/1723 MARYBOROUGH:** Keller Electronics 21/4559 NIDOLLO, ARA Delta Service 48/666 NARRABRI, Numa Electronics, Shop 41/1524 NALBA, Natter Electronics 28/749 STANTHOPE, Granite Bell  
**Communications 61/3333 TILB, Burns Electronics 61/4676 DEVONPORT, A Electronics 24/8222, JUNGLES NT, JUNGLES NT, MT GAMBER, Hutchison Communications 21/2540 PORT, NCCU Bassham TV  
& Comp World 82/788 WHYALLA, Eyre Electronics 45/4764 WA ALBANY, Micro Electronics 41/2077 BUNBURY, Micro Electronics 21/2222 GERALDTON, Batavia Lighting & Electrical 21/2728 KALGOORIE, Today's Electronics  
21/5217 KARRATHA, Plaza Optical Supplies 85/4536 MANDURRA, Micro Electronics 58/1206 PORT HEDLAND, Ivan Tomak the Elect 1/2531****

# BATTERY BONUS OFFER!

## FT-411E ENHANCED 2m HANDHELD

Our best 2m handheld! The enhanced FT-411E now provides both improved receiver sensitivity and better rejection of out-of-band signals, whilst retaining its compact size (55 x 155 x 32mm) and ease of use. The multi-function back-lit keypad allows fast frequency entry, plus programming of the 49 tuneable memories, setting of the programmable power-saver system and a host of other convenient functions. The microprocessor control system also features 2 VFOs, rotary dial tuning in 5 selectable tuning

steps, a back-lit 6 digit LCD screen with bar-graph P/Q/S-meter, and a range of scanning features including busy channel, band, selective memory scanning and priority monitoring. VDX (Voice Operated Tx) circuitry allows hands free operation with the optional YH-2 headset. The FT-411E is supplied with an ultra long-life 7.2V 1000mAh NiCad battery pack, carry case, belt clip, 'rubber duckie' antenna and approved AC charger.

Cat D-3350

### 2 YEAR WARRANTY

\* SPARE BATTERY OFFER

#### Specifications:

Frequency Coverage: 144-148MHz  
Channel Steps: 5, 10, 12.5, 20 & 25kHz  
Supply Voltage: 5.5-15V DC  
Output Power: 2.5W @ 7.2V  
Current Consumption: 7mA  
Stand-by (with 1 sec. save): 150mA  
Receive: 21.4MHz, 455kHz  
IF Frequencies: Better than 0.15dB SINAD

\*BONUS CA-2 DESK CHANGING STAND  
SAVE \$39<sup>95</sup>

**\$449**

### Ultra Compact

## FT-23R 2m HANDHELD

The FT-23R is an ultra-compact (just 55 x 139 x 32mm) microprocessor controlled handheld transceiver that offers extremely rugged construction and exceptional ease of use. It covers 144-148MHz and features 10 memories, 6 digit LCD with P/Q/S-meter, band/memory/priority scanning, 1MHz up/down stepping, repeater reverse operation,

selectable tuning/scanning steps, decast transceiver casing, FNB-10 600mAh NiCad Battery pack giving 2.5 watts output and rubber gasket seals around all external controls and connectors. It comes with a mini 'rubber duckie' antenna, carry case, belt clip, and approved AC charger.

Cat D-3490

\* BONUS FBA-17 DRY CELL CASE,  
SAVE \$19<sup>95</sup>

**\$369**

\* SPARE BATTERY OFFER

#### Specifications:

Frequency Coverage: 144-148MHz  
Channel Steps: 5, 10kHz, 1MHz  
Supply Voltage: 6-15V DC  
Current Consumption: 18mA  
Stand-by: 150mA  
Receive: Better than 0.25uV  
Sensitivity (12dB SINAD)

### 2m & 70cm In One!

## FT-470 DUAL-BAND HANDHELD

Dual-band performance at its best! The FT-470 is a very easy to use handheld transceiver that offers a high degree of flexibility through the use of a sensible microprocessor control system to provide both 2m and 70cm operation in one compact unit. Dual independent IF circuits allow several functions to be performed simultaneously, including dual-band reception, and full cross-band operation. The FT-470 also has 21 tuneable memories and 2 VFOs per band, plus built-in C.T.C.S.S. (tone squelch) with a paging facility and a wide variety of scanning functions. A

back-lit LCD screen shows a 5.5 digit frequency display on both bands simultaneously and bar-graph P/Q/S-meter lets you know exactly what you're doing. A programmable 'power-saver' system helps maximise battery life, allowing squelched receive current of as low as 7mA. The FT-470 comes with an ultra-high capacity 7.2V 1000mAh NiCad battery pack, carry case, belt-clip, dual band antenna and approved AC charger.

Cat D-3360

\* BONUS  
BATTERY OFFER

#### Specifications:

Frequency Coverage: 144-148MHz, 430-450MHz  
Output Power: 2.3W (both bands, 7.2V)  
Supply Voltage: 5.5 to 15V DC  
Current Consumption: 8mA (each band)  
Stand-by (with 1 sec. save): 150mA (each band)  
Receive: Better than 0.15dBuV (both bands)  
Sensitivity (12dB SINAD): 55 x 100 x 32mm  
Size:

2 YEAR WARRANTY **\$699\***

### DS XPRESS PHONE & MAILORDER SERVICE

Outside Sydney (FREE CALL) 088 22 6610 Sydney And Enquiries - 888 2105

FAX: (02) 806 1986 or write to DS XPRESS, PO BOX 321 N/RYDE NSW 2113

All Major Credit Cards Accepted. O/R's Courier Available



YAESU STOCKS NOT HELD AT ALL STORES. PLEASE CONTACT YOUR LOCAL STORE FOR STOCK AVAILABILITY, OR ORDER BY PHONE 088 22 6610



# VHF SAVINGS



2 YEAR WARRANTY!

## FT-212RH MOBILE 2M FM TRANSCEIVER

SUPER VALUE

With 45 watts output over the 144-148MHz range, a rugged diecast chassis for superb RF isolation, extensive use of surface mount components, and a large back-lit LCD with bargraph PDS-meter, the FT-212RH is an ideal mobile FM transceiver that also doubles as an easy to use base station. Features include 5 selectable tuning steps, a total of 21 memories (18 general purpose, one CAL-channel and 2 sub-band limit memories for band scanning), in-built CTCSS encode, as well as a variety of scanning functions. The FT-212RH comes with a mobile mounting bracket, convenient MH-14A8 hand microphone, and DC power lead.

Cal D-3494

SAVE \$70 **\$499**



## FT-736R VHF/UHF BASE-STATION TRANSCEIVER

The FT-736R is Yaesu's best VHF/UHF transceiver! Designed for the serious VHF/UHF operator, this high-performance transceiver provides 25W output (SSB, CW, FM) on the 2 metre and 70cm (430-450MHz) bands as well as 10W output on the 6m band. It can be easily expanded to also cover the 23cm (1240-1300MHz) band as required. Features include keyboard frequency entry, 115 memories, 2 independent VFOs per band, separate FM channel knob with selectable channel steps, 2 full duplex VFOs for Satellite operation, F skt and notch filters, noise blanker, all-mode VOX, SSB speech processor, GaAs Fet front ends (430, 1200MHz), high stability TCXO reference oscillator and an in-built AC power supply.

Cal D-2925

\* BONUS MH-1 HAND MIC SAVE \$49<sup>95</sup>

2 YEAR WARRANTY

- 23cm module (D-2922) \$799
- High power antenna duplexer (D-3303) \$79<sup>95</sup>

## FT-4700R DUALBAND MOBILE FM TRANSCEIVER

Features 50 watts output on 2 metres, and 40 watts output on 70cm (430-450MHz), with Full-duplex crossband operation or dual-band reception modes provided, so you can listen for calls on both bands simultaneously, or work someone on one band while also listening on the other band. The optional YSK-4700 extension cable allows the main body of the transceiver to be installed remotely, while the front panel mounts conveniently on the dashboard. On the front panel the amber back-lit LCD shows both VHF and UHF frequencies and signal strengths, and all controls are back-lit for clear readability, with a dimmer switch for nighttime viewing. A total of 20 memories and 5 selectable tuning steps make frequency selection easy, while the advanced scanning features allow quick detection of signals on either, or both bands. See ARA review Vol 12 Issue 11 (Feb 1990), or AR review May '89.

Cal D-3300

2 YEAR WARRANTY

SAVE \$100 **\$899**

Cal D-3301 YSK-4700 Extension Cable \$49.95



**\$2495** 6m, 2m, 70cm LIMITED STOCKS!

**DICK SMITH ELECTRONICS**

ABW • Albany 21 8398 • Bankstown Square 707 4868 • Blacktown 871 7722 • Brookvale 906 0441 • Bondi 387 1444 • Campbelltown 22 2199 • Chateau Chase 411 1955 • Chulora 842 9922 • Gore Hill 439 5311 • Gosford 25 0235 • Hornsby 477 6633 • Hurstville 580 8633 • Kogarah 58 2002 • Liverpool 800 8606 • Maitland 35 7086 • Miranda 525 5222 • Newcastle 51 1986 • North Ryde 878 9554 • Orange 616 4000 • Parramatta 868 2188 • Penrith 32 3400 • Railway Square 211 3777 • Sydney City 287 9111 • Tamworth 68 1711 • Wollongong 28 3400  
ACT • Belconnen (06) 253 1786 • Fyshwick 80 4444 VIC • Ballarat 31 3433 • Benicgo 43 6366 • Box Hill 890 0999  
• Colong 363 4465 • Dandenong 704 9377 • East Brighton 582 1288 • Essendon 379 7444 • Footscray 849 2085  
• Frankston 793 9144 • Geelong 232 2111 • Melbourne City 399 Elizabeth St 326 8058 & 246 Bourke St 639 0396  
• Richmond 428 9814 • Ringwood 879 5336 • Springvale 347 0522 QLD • Brisbane City 229 9377 • Bundamba 391 8233 • Cairns 311 616 • Chermside 368 8256 • Healdville 288 5596 • Rockhampton 27 9644 • Southport 32 8033 • Toowoomba 36 4300 • Toowoomba 72 5722 • Underwood 241 0944 • WA • Adelaide City 223 4122  
• Beverley 347 1800 • Elizabeth 265 8098 • Enfield 260 8098 • St. Marys 277 8977 WA • Canning Vale 481 8686  
• Fremantle 336 9733 • Perth City 481 3261 • Maitland 250 1400 • Northbridge 338 8848 TAB • Nelson 31 0600 NT  
• Stuart Park 91 1977  
STORES ACROSS AUSTRALIA & NEW ZEALAND

B1261/M1

# AWARDS

JOHN KELLEHER VK3DP - FEDERAL AWARDS MANAGER

## Grid Square Awards Redrafted Rules

- (a) The Wireless Institute of Australia Grid Square Award (WIA GSA) is awarded for contact with a minimum number of "Maidenhead" 2 degree x 1 degree grid square locators per band as indicated in (b). Grid Squares are designated by a combination of two letters and two numbers.
- (b) The minimum number of squares needed to initially qualify for each individual band award are as follows:  
All HF bands, including WARC bands — 100  
50MHz — 50  
144MHz — 30  
432MHz — 25  
1296MHz — 10  
13cm — 5  
all bands above — 5
- Only contacts made on or after 1 January 1990 are creditable for this award.
- (a) Individual band awards are endor-  
seable in the following increments:  
— All HF bands 25  
— 50MHz 10  
— 144MHz + all bands above 5  
(b) Separate bands are considered as  
separate awards.
- (a) No crossband contacts permitted.  
(b) No contacts through active repeater  
or satellite devices or any other relay  
method permitted.  
(c) Contacts with aeronautical or mari-  
time mobile stations do not count.
- Stations who operate portable or mobile  
from a different locator than their "home"  
locator may claim the locator they are  
operating portable from, by either of two  
methods:  
1. work a station located in their "home"  
locator;  
2. work at least five different stations  
outside the portable locator;  
3. on bands 1.2GHz and above, work at  
least one station outside the portable lo-  
cator.
- (a) All contacts for all of the individual  
band awards must be made from a loca-  
tion or locations within the same grid  
square, or locations in different grid  
squares no more than 50 kilometres apart.  
This will be called the "HOME" locator.  
Excepting contacts made under the provi-  
sions of Rule 5.  
(b) A specified amount of contacts for the  
basic award needs to be made with sta-  
tions located in Australia or its territories  
(ie any prefix VK0 to VK9) as per the table  
below.

- |                 |    |
|-----------------|----|
| All HF bands    | 25 |
| 50MHz           | 10 |
| All other bands | 1  |
- Endorsements will be available on re-  
quest, ie however you want it endorsed is  
how it will be done.
  - (a) QSL cards are not required; a cer-  
tified log extract should be provided with  
the following information:  
— Date, time, callign, mode, frequency,  
grid locator and signal report sent by the  
station concerned, and grid you are op-  
erating from if portable.  
This list should be certified by an official  
of a society affiliated with the WIA, or by  
two licensed amateurs, reading as fol-  
lows: "We certify that the enclosed list  
corresponds with the information con-  
tained in the said logbook."  
(b) For those who would have difficulty in  
getting a certified list, photocopies of your  
logbook signed by the applicant certifying  
all the information contained within to be  
true and accurate can be certified by the  
Awards Manager.  
Note: All entries must be legible.
  - The cost for each award is Australian  
\$5.00 for amateurs in Australia, or  
\$US5.00 or eight IRCs for those outside  
Australia. Requests for endorsements  
should be accompanied by an SASE or one  
IRC and SAE.
  - This award is very much dependent upon  
the honesty of the operator. As such, any  
fraudulent applications will result in the  
disqualification of the applicant from all  
future WIA GSAs.
  - Any decisions regarding interpretation of  
the rules here printed made by the Fed-  
eral Awards Manager are final and bind-  
ing.
  - There will also be a standing list of the top  
five scorers on each band, so people can  
see just what is possible and what is being  
achieved. This may encourage those who  
think they will never reach their target. It  
will also give those who like a bit of com-  
petition something to aim for.

## Worked All States Award Rules

- The WAS (Worked All States) award is  
available to all amateurs world-wide who  
submit proof with written confirmation of  
having contacted each of the 50 states of  
the United States of America. The WAS  
awards program includes 10 different and  
separately numbered awards as listed  
below. In addition, endorsement stick-  
ers are available as listed below.
- Two-way communications must be estab-

lished on amateur bands with each state.  
Specialty awards and endorsements must  
be two-way (2X) on that band and/or mode.  
There is no minimum signal report re-  
quired. Any or all bands may be used for  
general WAS. The District of Columbia  
may be counted for Maryland.

- Contacts must all be made from the same  
location, or from locations no two of which  
are more than 50 miles apart which is  
affirmed by signature of the applicant on  
the application. Club station applicants,  
please include clearly the club name and  
callign of the club station (or trustee).
  - Contacts may be made over any period of  
years. Contacts must be confirmed in  
writing, preferably in the form of QSL  
cards. Written confirmations must be  
submitted (no photocopies). Confirmations  
must show your call and indicate that  
two-way communications was established.  
Applications for specialty awards or en-  
dorsements must submit confirmations  
that clearly confirm two-way contact on  
the specialty mode/band. Contacts made  
with Alaska must be dated 3 January  
1959 or later and, with Hawaii, dated 21  
August 1959 or after.
  - Specialty awards (numbered separately)  
are available for OSCAR satellite, SSTV,  
RTTY, 432MHz, 220MHz, 144MHz,  
50MHz and 160 metres.
  - Endorsement stickers for the basic mixed  
mode/band award and any of the specialty  
awards are available for SSB, CW, Nov-  
ice, QRP, Packet, EME and any Single  
Band. The novice endorsement is avail-  
able for the applicant who has worked all  
states as a novice licensee. QRP is defined  
as 10 watts input (or five watts output) of  
the applicant only and is affirmed by sig-  
nature of the applicant on the application.
  - Contacts made through "repeater" devices  
or any other power relay method cannot  
be used for WAS confirmation. A separate  
WAS is available for OSCAR contacts. All  
stations contacted must be "land stations".  
Contact with ships, anchored or other-  
wise, and aircraft, cannot be counted.
  - A WVE applicant must be an ARRL  
member to participate in the WAS pro-  
gram. DX stations are exempt from this  
requirement.
- HQ reserves the right to spot call for inspec-  
tion of cards (at ARRL expense) of appli-  
cations verified by an HF Awards Man-  
ager. The purpose of this is not to call into  
question the integrity of any individual,  
but rather to ensure the overall integrity  
of any individual, but rather to ensure the  
overall integrity of the program. More  
difficult attained specialty awards (such  
as 220MHz WAS for example) are more  
likely to be so called. Failure of the ap-  
plicant to respond to such spot check will  
result in non-issuance of the WAS certi-  
ficate.

9. **Disqualification.** False statements on this application or submission of forged or altered cards may result in disqualification. ARRL does not attempt to determine who has altered a submitted card; therefore do not submit any marked-over cards. The decision of the ARRL Awards Committee in such cases is final.
10. **Application Procedure** (Please follow carefully)  
(a) confirmations (QSLs) and application form (MCS-217) may be submitted to an

approved ARRL Special Service Club HF Awards Manager. ARRL Special Service Clubs appoint HF Awards Managers whose names are on file at HQ. If you do not know of an HF Awards Manager in your local area, call a club officer to see if one has been appointed. If you can have your application so verified locally, you need not submit your cards to HQ via the mails. Otherwise, send your application and cards to HQ, as indicated on the application form.

- (b) Be sure that when cards are presented for verification (either locally or to HQ) sort them alphabetically by state, as listed on the back of the application form, MCS-217.
- (c) All QSL cards sent to HQ must be accompanied by sufficient postage for their safe return (postage guidelines attached).
- (Note: Australian applicants can obtain an application form from and have their QSLs verified by the WIA Federal Awards Manager).

## CONTESTS

(INFORMATION PROVIDED BY RELEVANT CONTEST MANAGERS)

### Contest Calendar

Jan 1992  
To 12 Ross Hull  
25-26 VHF-UHF Field Day

March  
14-15 John Moyle FD  
18-19 JA "59" DX Magazine CW

### RD Contest '91

Late logs were received from the following  
VK7HK  
VK6GGA  
VK6GGD  
VK5APD  
VK2EY  
VK5UE  
VK3HZ

These logs, if added to the results, would not have changed the winner, which was VK3 for the second year in succession.

### Correction — '91 Novice Contest

Section B Novice Winner — VK4VXX  
Score — 150 points  
Incorrectly placed in Phone Section

### Japan International DX Contest

Sponsored by JA "59" DX Magazine  
Box 59, Kamata, Tokyo, 144, Japan

#### CW Section

Date: 13-15 March 1992  
Time: 2300 UTC to 2300 UTC  
Bands: Classical DX Bands (No WARC: 80 to 10 metres)

Whilst the period of the contest is 48 hours, the maximum a single operator can participate is a total 30 hours only.

#### Class of Participation:

1. Single operator multiband
2. Single operator 80m
3. Single operator 40m
4. Single operator 20m
5. Single operator 15m

6. Single operator 10m
7. Multiband — multioperator  
To call: "CQ JA DX"

Overseas operators will give cypher numbers from 001 to 999. Overseas participants to contact Japanese stations only.

Scoring: 80m: 2pt. 40 and 15m: 1 pt.  
20m: 1pt. 10m: 2pt

Total score: Total points multiplied by the number of prefectures worked

Logs to be submitted: CW section: 30 April

Address: Logs and summary sheets to: JA "59" DX Magazine, Box 59, Kamata, Tokyo 144, Japan.

### Results of the 15th West Australian Annual 80m CW and SSB Contests for 1991

Congratulations to VK6PGG and VK6BN on winning the CW and SSB sections respectively.

#### Results for the 3.5MHz CW Contest:

	points
VK6PGG	3668
VK6BN	2420
VK6AFW	2260
VK6ABL	2052
VK6BSL	938
VK6BWI	600
VK6BEB	480
VK6JQ	340
VK6WZ	270

#### Results for the 3.5MHz SSB Contest:

	points
VK6BN	5474
VK6BGF	4704
VK6DE	4288
VK6ELL	4004
VK6AMB	3900
VK6IU	3562
VK6WZ	1560

All participants enjoyed the contests with reasonable band conditions on both nights. One particular comment is the lack of novice operators in spite of slow CW calls by opera-

tors. Also the shortage of country stations and "where are all the logs" — the sum total being the above.

C WATERMAN VK6NK

### Ross Hull Contest 1991-1992

A couple of minor rule changes have been made in response to comments received, but otherwise the rules are much as proposed in May and October AR.

The contest has been shortened slightly. Contest days will now begin at 1800 UTC and so will coincide with local days. The dates are from 1800 UTC on 20 December to 1800 UTC on 12 January. In our time zone, this means three weeks and four full weekends beginning early in the morning on Saturday, 21 December, and ending when you go to bed on the night of Sunday, 12 January.

Scoring will be based on the best seven days for each band. Your best seven days on six metres need not be the same days picked for two metres, and so on. Last year's logs were analysed to improve the balance between the various bands, and the band multipliers have been changed as shown below.

The satellite section has been dropped. There was only one entry last year and there seems to be little point in continuing it.

Most of the big point scores come from DX contacts, so it is in everyone's interest to avoid cluttering the calling frequencies with local QRMs. This was a major problem last year and resulted in a number of DX contacts being missed — exactly the opposite of what the contest aims to achieve!

This year a frequency of .150 on each band is suggested for routine contest working. If you have two VFOs, it is easy to keep tabs on "point one", but to shift to .150 for your routine number-swapping. On six metres, avoid 50.110 like the plague. It may be necessary to move just below 50.150 for ZL contacts, but otherwise please use 50.150 and above. For local contacts 52MHz would be even better.

If you are interested in portable operation, make a special note of the last weekend of the contest. The VHF-UHF Field Day will take place on 11-12 January and you can count any contacts for the Ross Hull Contest as well. Please give consideration to heading for the hills over that weekend.

I hope this year's contest will be a roaring success, and I wish all entrants the best of luck.

## Ross Hull Contest 1991-1992: Rules

The WIA maintains a perpetual trophy in honour of the late Ross Hull and his pioneering achievements in the VHF-UHF field, especially the discovery and investigation of VHF tropospheric propagation.

The name of each year's contest winner is engraved on the trophy, and s/he will receive an attractive wall plaque and certificate. The contest is not confined to WIA members.

### Duration

1800 UTC Friday, 20 December 1991 to 1800 UTC Sunday, 12 January 1992. Scoring will be based on the **best seven contest days** (ie 1800-1800 UTC) on each band, as nominated by the entrant.

### Sections

A: Multiband. B: Single band.

All entrants will be scored for both Section A and Section B.

### General Rules

All bands above 30MHz may be used. Single operator only. One contact per station per band per contest day. Crossband contacts, repeater contacts and satellite contacts are not permitted. Entrants may operate from any location.

### Contest Exchange

RS (or RST) numbers plus a two-digit serial number. Serial numbers should begin again at 01 at the start of each contest day. Maidenhead locator numbers may be exchanged as an aid to distance calculation.

### Scoring

One point per 100km or part thereof (ie up to 99km: 1 point; 100-199km: 2 points etc). On six metres only, as above, but up to a maximum of 10 (ten) points per contact.

### Band Multipliers

6m 2m 70cm 23cm 2.3GHz Higher  
x1 x4 x7 x10 x13 x16

### Logs

Logs should cover the full contest period. Distance estimates need only be made for the seven chosen days on each band. Separate logs for each band would help, but are not essential.

Logs must contain the following for each contact.

- UTC date and time
- Station location (if operating portable)
- Callsign of station worked, band and mode
- Location or Maidenhead locator of station worked

- Reports and serial numbers sent and received
- Estimated distance worked and points claimed

### Cover Sheet

Logs must be supplied with a cover sheet containing:

- Operator's callsign, name and address
- Station location (if different from the postal address)
- A scoring table set out as the example below
- A signed declaration that the station has been operated in accordance with the rules and spirit of the contest

### Deadline

Logs must be received by Monday, 17 February 1992. Early logs would be appreciated. Post logs to WIA Ross Hull Contest Manager, PO Box 300, Caulfield South, Vic 3162.

### Disqualification

The normal rules apply. Entrants may be disqualified if there is evidence that claimed contacts were not actually made, or if logs are incomplete or illegible.

### Awards

The overall winner will be the top scorer in Section A. Awards will also be made to the top scorers on each of the following bands: 6m; 2m; 70cm; 23cm; 13cm; microwaves (bands above 3GHz).

### Note on Calculating Distances

Absolute accuracy is not needed. All you need to know is whether the distance is above or below the nearest multiple of 100km. "Ruler and map" estimates will often be quite good enough for this. Better estimates can be made from six-digit Maidenhead locators, using simple computer programs published in December 1990 and January 1991. The contest manager reserves the right to correct distances on the basis of computer calculation, and his decision will be accepted as final.

### Sample Scoring Table

Ross Hull Contest 1991-1992: Log of VK0XXX

6 metres			2 metres			70cm			etc		
Date	Score		Date	Score		Date	Score		Date	Score	
29 Dec	xxx		27 Dec	xxx		29 Dec	xxx		6 Jan	xxx	
7 Jan	xxx		31 Dec	xxx		6 Jan	xxx				
10 Jan	xxx		6 Jan	xxx		9 Jan	xxx				
WE:											
Total	xxx			xxx			xxx			xxx	
Mult	x1			x4			x7			x16	
Total	xxx	+		xxx	+		xxx	-		xxx	-

## VHF-UHF Field Day 1992

In the past, this Field Day has been run over the Australia Day weekend, which is the last weekend of the school holidays. Last year it was suggested this could clash with family

commitments and an earlier date would be better. There is also a good chance of more amateurs being on holiday in mid-January than there would be at the end of the month.

So the Field Day has been moved to 11-12 January 1992. This coincides with the last weekend of the Ross Hull Contest, and any Field Day contacts can also be counted for the Ross Hull Contest. This weekend will also be an ideal opportunity to add to your collection of locators for the new Grid Square Award. So there are three very good reasons to keep that weekend free, and go portable if you can!

Scoring for the Field Day will continue to be based on locator squares, but the band multipliers have been brought into line with those used for the Ross Hull Contest.

### Duration

0200 UTC Saturday, 25 January to 0200 UTC Sunday, 26 January.

### Sections

- A: Portable station — single operator
- B: Portable station — multiple operator
- C: Home station

### General Rules

All modes and bands above 30MHz may be used. Repeater and crossband contacts are not allowed. Entrants may not operate from more than one locator square. You may work stations within your own locator square.

### Contest Exchange

A serial number beginning at 001, plus Maidenhead locator. RS or RST reports may be exchanged but are not required in the log.

### Repeat Contacts

Stations may be worked on each band once every four hours.

### Scoring

Home stations one point per contact. Portable stations two points per contact. Three points if both stations are portable.  
6m 2m 70cm 23cm 2.3GHz Higher  
x1 x4 x7 x10 x13 x16

For each band, multiply the points score by the number of locator squares worked on that band, then by the appropriate band multiplier. For example, on two metres, 20 contacts x 4 squares x 4 = 320 points. See the sample scoring table below.

### Awards

The overall winner will be the highest all-band scorer in Section A. Awards will also be made to the highest scorer on each band in Section A, and the highest scorers in Sections B and C.

### Logs

For each contact, UTC time, band, station worked, serial numbers and locator numbers exchanged, points claimed. The front sheet

should contain the name, address and call-sign of the operator, station location, section entered, and a scoring table as follows:

Band	Points	Squares	Total (points x squares)
6m	XXXX	X XXXX	= XXXX
2m	XXXX	X XXXX	= XXXX

Desired Time

XXXX

#### Entries

Post logs to the Manager, VHF-UHF Field Day, PO Box 300, Caulfield South, Vic 3162. Logs must be received by Monday, 24 February 1992.

any 1992. Early logs would be appreciated.

JOHN MANTON VK2ZJC

ROSS HULL AND VHF/UHF FIELD DAY

CONTEST MANAGER

ar

## VHF/UHF - AN EXPANDING WORLD

ERIC JAMIESON VK5LP - PO Box 169 MENINGIE 5264

### All times are UTC The Beacons

Last month I published the list which normally appears in December, so for now you will need to be content with any alterations or additions.

A letter from John Miller ZL3AAU brings us up to date on the state of beacons in New Zealand. They currently stand at:

50.043	ZL3MHF	RE66	Aylesbury	50w	A1A
50.0525	ZL3MHF	RE57	Greymouth	30w	A1A
51.020	ZL1UH	RF73	Nihotupu	25w	F1
51.030	ZL2MHF	RE78	Napier	10w	F2
52.510	ZL2MHF	RE78	Mt Clunie	4w	F1
50.0475	ZL2777	RF70	New Plymouth	was approved on 11/1/90, but is not operational.	

ZL3MHF runs 50 watts switched alternatively to two bi-directional beams NE/SW and NW/SE. The identifier is ZL3MHF twice, then carrier followed by either NW or NE twice. The beacon has been operational on 50MHz for about 12 months.

P29BPL has been noted on 50.0195. The five JA beacons have been heard this month, and a frequency check made. They are JA2IGY on 50.009, JA6YBR 50.016, JA7ZMA 50.026, JA7YYL 50.047 and JG1ZGW 50.049MHz.

VK7RSB on 50.057 is shown in the FTAC list, but I have no details. For more information on the proposal for 50MHz beacons in Australia, I refer you to the FTAC Notes in AR this month. Ron VK4BRG is testing a beacon on an initial frequency of 50.0775; if successful, consideration will be given to the use of a frequency following FTAC guidelines and whether the beacon will be moved to another location.

A new Adelaide beacon can be found on 432.450MHz signing VK5ACE at present. It is radiating a good signal into Meningie. In the near future it will be shifted to Mount Lofty and housed with another new beacon on 1296.450MHz. More details later.

### Six Metres

This band can still bring forth surprises. Peter VK8ZLX had exciting times. Some of his notable contacts included: 22/9 BV2, 23/9 V85; 28/9 PA3; 11/10 JD1; 16/10 OZ1, DL8, SM7, OH2, GW0, PA3, G4, OE and LA between 0740 and 1001. On 17/10 between 0831 and 1026 he worked ON4, DK, OZ1, PA3, GW0, LA9, G6 and SM. 18/10 between 0641 and 0747 DL7, IV3, ON1, PE1, YU3 and DK. 19/10 at 0249 KL7, and from 0651 OZ, OH3,

SM7, OZ5, OE, DL, PA, FC, IK, YU3, YU2 and GJ4. All these prefixes for a total of 217 European contacts!

### More Europeans

First reported European opening appears to have been on 28/9 when VK3OT heard and called ON4ANT. VK8ZLX worked PA3UI at 0749, VK4FP into southern UK around 0900, and VK4FP was reported as having worked 9H1JN, 9H1AW and DK3UG. (Last year the first opening was on 19/10/90). Other same day's news included four VK6s having worked JT1CO in Mongolia. On 11/10 I heard that VK4FP had worked SV and 9H1, and VK8RH worked Italy. On 13/10 VK4FP to YU, G and F. During mid-October, for several days, JA, KG6 and V86 had also been working to Europe, including Gibraltar on 14/10. On the morning of 15/10 JAs were working Brazil on what appeared to be the long path which would have to be over Australia. VK4s from Brisbane to Townsville were there on Es.

Ultimately, some operators in lower climates were treated to European contacts, but not until 18/10. JAs had been into VK5 all day, and late in the afternoon strong backscatter CW signals were noted from VK2QF, VK2BBR, VK2EDB, VK2FLR, VK3OT, VK3LK, VK3AMZ, VK3AMK, VK3AKK and VK5NC, plus many strong video signals peaking around 330 degrees. At 0643 VK8ZLX was working DL so there were possibilities for the southern regions. The JAs were already working Europe.

On 10 metres at 0906 OZ1BVW said he was hearing signals from VK and JA on six metres. Then a report came in that VK4HT had worked YU3. Soon after, the band from 50.080 to 50.130 erupted with VK2s and VK3s calling Europe and working stations split frequency on CW. Prefixes worked included GJ4, DL7, DL2, IV3, PA0, OZ1, ON2, PA3, PA2, PA4, DK8, ON4, ON1, DM8, DK8, GM0 and YU3, the latter being a rare catch. For good measure, some worked N16E in Hawaii! Between 0730 and 0841 I noted strong video on 49.224 and was later told this could have been from France. Not knowing this, I did not call — perhaps I had the only opening to France — no French stations were heard or worked by anyone else, so I will never know if I missed an opportunity!

Ray VK3LK sent a letter to say he worked

9xOZ, 6xPA, 3xPA, 3xON, 3xSM, 2xDL and GJ4, working 24 and heard YU and LA. Ray commented that the opening peaked around the Heywood/Hamilton area, with less being heard and worked to the east and west. VK3OT worked 21 stations, and I have no details of the tallies from the Melbourne stations. Trevor VK5NC in Mount Gambier worked three stations, so by the time signals got to him they were tapering off. It is doubtful whether any were heard in Adelaide; certainly Roger VK5NY missed out and there was not so much as a beep to be heard here at Meningie. It was most frustrating to hear the others working so many areas and VK5 missing out.

As always, Queensland receives its fair share of contacts. In the Brisbane area, John VK4ZJB reports various stations were involved in contacts on 2/10 to W5, W6 and ZK1CG; 4/10 K5, AA6TTQ; 6/10 WA4 and WB4, V78AT; a prize catch on 8/10 between 0400 and 0500 was JT1CO in Mongolia, with signals varying from 5x9 to 5x1. At that time there were wall-to-wall JAs; 10/10 at 0320 JT1CO again, then from 0900 to 0930 9H1JN and 9H1AW with signals to 5x9 — Lance VK4ZAZ worked them whilst he operated mobile! 17/10: OZ1LO in FK30 at 529 to VK4ZJB for four minutes only.

Other good contacts on 14/10 commenced with Geoff GJ4ICD to Mike VK2FLR. Mike said it was an astonishing five-minute opening into Sydney with signals to 599, before moving to VK4JH and VK4RO. This was apparently the first European contact to Sydney and may well constitute a new record from the UK to VK. Mike wrote:

"The surprise for me was that, while we had strong 48.25 and 49.75 TV at the time, there was no in-band frame buzz, usually a bad sign. Geoff's signal shot out of the noise on 50.110, but lasted only a few minutes. No other Europeans were heard here, but we did hear the VK4s on Es working in that direction. On 18/10 I could hear VK2QF near Mudgee working into Germany, Denmark and possibly Norway, but nothing was heard in Sydney. On the night of 16/10 I spoke to G3HBR on 10 metres, who reported getting a recognisable picture from DDQ0 in Toowoomba earlier in the evening. Apparently the 46.172 video was the strongest he had ever heard it.

Reports were coming in of the north Queensland operators working W5 and W6, also to Malta and Greece. Hawaii was working into the eastern states, plus VK5 and VK8. VK6PA had a wide coverage of contacts to Europe. Joe VK4JH is often a strong Es signal into VK5. It

was noted on 17/10 that he had worked BV, BY, VS6, JA, FK, 3D2 for starters!

On 19/10 CN8FT in Morocco was worked by VK4HT, VK4BUN, VK8RH and others in each of those states. That was a good catch. KL7NO was into VK5 at 0255 on 19/10. More thrills came on 27/10 when the Briabane gang from 0740 had ON1BV on CW, SV1SV, SV1DH, SV1AB, SV1UN, SV1EN and SV0BY, all on SSB with signals to 5x5.

On 28/10 VK4RO said W5 came into Adelaide during the morning for a brief CW stint. Large solar flares produced an aurora on 29/10 from 0500. JAs were 579 at 0550 with the characteristic garbled auroral sound. They came from JA1, 2, 3, 7, 8, 9 and 0, and remained available on CW and SSB until 0940 when they quickly disappeared. All five JA beacons were audible during this opening, peaking to S6. Some contacts were made from VK5 to VK2 and VK3 using the auroral path.

## Sarina Report

Ron VK4BRG at Sarina continues to pull in the DX, slowly but constantly adding to his very respectable countries score. The JAs and KH6s continue to dominate the openings, so omitting them the following is a selection of his contacts.

26/8: 0028 to 0218 17 W6 and W5, with most from Texas; 0128 K1HTY in Maryland, assisted by E6; 30/8: 2349 K5CM; 3/9: 0005 to 0203 fourteen W5 in Texas and Oklahoma; 5/9: 0909 B24SAA — Ron commented that he had met the operator, Kang, on his visit to China, so was very pleased to make a 6m contact with him; 10/9: 0022 WQSS; 12/9: 0247 WQSS and K5CM, 0831 KH4AF Johnson Island and 1008 JD1BFI Ogasawara; 19/10: 0822 to 0934 GJ4ICD, GW4EAL, six PA, 12 G; 21/10: 0121 to 0155 three W7 in Oregon, one W6, one W7 in Arizona; 22/10: 0038 N1GE, 0042 KH6IAA, 0043 to 0216 14 W6, W7 Arizona and W7 New Mexico; 25/10: 0059 K7GGJ, 0112 WB7PEK, both in Oregon; 26/10: 2244 to 2321 six W6. (A late report indicates Ron worked to W1 again on 29/10, and that's a long way... 5LP).

Ron added there has been a high degree of good propagation in the northern hemisphere, with the east-west path from W working into the north Pacific. He had heard JAs working South America, but little of this filtered down to the south-west Pacific, though ZL had had many more openings to W than he had during the latter part of October.

## The Hargraves Report

Nev VK2QF sends a brief report which indicates he heard JT1CO as a beacon on 10/10 at 0345 but could not break through. On 18/10 there were many strong video indicators below 50MHz which led to a European opening between 0831 and 0958 when he worked DL8HCZ, SM7AE, OZ1LO, OZ8RW, SM7FJE, SM7SCJ, SM7BAE, OZ2LD, DL8HCZ (SSB), PA2VST, PA0LSB and PA3BFM. There were new countries and gave

New WAC.

## Nauru on Six Metres

Stephen Pall VK2PS, the DX editor, forwarded news from Jack T30JH that Brian C21BR is to activate Nauru on six metres for two years from 3 November 1991, using equipment lent by Peter VK4APG and a beacon constructed by Nev VK4ZNC and operating on 50.110. The equipment will run 100 watts of SSB. Nauru should be within multi-hop E distance of Australia. Liaison will be via **AMATEUR**.

## Using 28.885MHz

By the way, I would be a lot happier about 6m F2 contacts in general if they were fully completed on 50MHz rather than on 28.885. I recently heard a VK on 28.885 say to a European: "You heard me calling CQ — Yes. — I heard you calling CQ, therefore it is a contact!" Really!

Only this last week I heard a JA receive his 6m signal report via 10 metres. In the past there have been other instances. Let us all play the game fairly. In the future I will be increasing my surveillance of 28.885, and any such breaches of operating conduct will be written in my notebook for future reference and a query referred to the operator, in the event the contact is claimed for the Standings List. So beware!

## Robert Greenwood VK4NG

My snipped in October AR regarding Bob VK4NG and early JA contacts has prompted two readers, Lance VK4ZAC and Noel VK4ZAR, to write filling in the information regarding the equipment used by Bob. Each agreed that his receiver consisted of a 6AK5/6J6 converter feeding into an AR7 receiver as the tunable IF. The transmitter used a 6SG7 crystal oscillator driving a 6V6 buffer to an 807 running 60 watts AM, modulated by a pair of zero bias 807s. Lance said he had a four-element Yagi at 35 feet and Noel said he finally settled for what he called his "Comical Quad". Noel enclosed a copy of a card from VK4NG for a contact on 9/11/57. Thank you for your interest gentlemen.

Lance VK4ZAC added that in 1958 he, VK4ZAR and VK4NG worked literally thousands of JAs and scores of Ws. Lance said he was probably the first Z call to work overseas and had a couple of JAs challenge the validity of his call as they could not see how he had gone through the alphabet so quickly! He said "try explaining that over a considerable (at the time) language barrier."

Incidentally, Noel commented that he had a similar set-up to VK4NG, but used a BC312 receiver. In 1958/59 Lance varied his similar equipment to include speech clipping in the modulator and two 807s in the PA. His tunable IF was an AR8. These references bring back feelings of nostalgia to me, as my first 6m

rig in 1960 was a pair of 807s modulated by a pair of zero bias 809s with high level clipping and filtering. One hundred watts of RF modulated by 100 watts of audio, with the appropriate clipping and filtering to keep the signal from spreading, did indeed result in a very potent signal. For receiving I used a Kingley KP/C610 ferrituned tunable converter (with considerable drift and still in my possession) and an AR7 as a 10.7MHz IF. Those were the days!

## News from England

Ted Collins G4UPS sends his monthly notes to Radcom, QST and up to a dozen other countries, so is interested in exchanging notes with me. His briefletter included a note which read "I have just received a beautiful certificate for the VK3 award working VK3OT for a VK3 distance record." In these depressing days, isn't it nice to read that someone has received something that brings them joy. Congratulations!

Ted also included many pages of 6m information covering August and September, plus a world beacon list and a list of 28 call signs with the prefixes and grid squares of YT and YU stations which had been worked to 29/91. Also, keys are often heard from V61E on 50.102 and TR8CA on 50.092. It is interesting to note that his list of regularly heard beacons includes VS6SIX on 50.0745.

The following information is condensed from that supplied by Ted G4UPS. The AN38IX beacon in Slovenia is now on 50.016. 9Q5EE has gone from Zaire, leaving only Gus 9Q5TE who runs two watts to a three-element Yagi. The French beacon FX4SDX is now on 50.314MHz. GM4DGT will activate TA4 (Turkey) in December 1991. Doug ZP6XDW has changed his call sign to ZP6CW. The 6m rig and antenna used by 5H1YK has been handed on to 5H3RA who will use it. Kevin ZC4KS from Cyprus is now on the band.

Dave 9L1US went QRT in October and the beacon on 50.091 will change to the club call sign 9L1SL. Dave may return to Africa and operate from Botswana A22. Malawi is likely to have two active stations, 7Q7CM and 7Q7LA. PY5CC has been trying some special call signs lately, including FX5A, PU5A and ZX9A. Jo W3JO will activate Jamaica as 6Y5/W3JO until 16/12/91. Gerard 6V7JG (also F2JD AND CE0ZZZ) runs 25 watts to a five-element and expects to be in Togo until February 1992. Two possible stations in Lebanon are Roger LA4GHA/OD5 and Samir OD5SK.

Richard G4CVI, Paul G4CCZ, Mike G3SED and Mike G3JVL will operate from Guyana and Brazil for two months commencing April 1992. They will use their G call sign 6R1 for Guyana. Permits to operate from OK are to be issued soon.

Prefixes heard or worked from England during September included CX4, PT7, LU8, LU7, CX8, CX9, FC1, 7Q7 CT1, 4N3, YU3, I7, OES, IK3, SV1, I2, IK4, SM7, DJ2, V61, A22,

IN8, 9Q5, VK6, VK8, Z23, DJ0, EA3, Z86, ZP6, TU2, 9L1, Z89, CT0, OZ7, OZ4, YT2, TU4, OH1, OE6, DL7, IIN, 9J2, TR8, 5V7, ZS4, 9H1, 9H5, OE6, SM1, SK6, LA9 representing 33 countries!

## Six-Metre Calling Frequency

Bill VK5ACY has expressed concern that there does not seem to be a recognised 6m calling frequency for Es contacts, particularly during the peak summer period. He mentions that last year there was strong opposition to working Es anywhere near 50.110 due to possible interference to long-haul DX.

Bill suggests a calling frequency of 50.200 as being far enough from the low end. That's true, but there is a problem that 50.200 is the upper limit of the 60MHz segment for the eastern states, so the sidebands from a signal could be outside that limit. As there is presently only limited operation between 50.150 and 50.200, why not use that portion for domestic contacts with a calling frequency of 50.160. This would allow an area for contacts to be moved higher in frequency after making initial contact on the call frequency. Currently I tune to 50.160 and above when checking the band for signals, so it would mean no change to my operating habits. By the time you read this it will be December and the Es "season" so why not try it this year and see what happens. The Ross Hull Contest could be conducted from 50.150 to 50.200 without worrying anyone seeking DX from other countries. Then, of course, do we want to abandon

52MHz? Your thoughts please.

## Two Metres and Above

There has been a reasonable degree of activity, mainly on 144 and 432MHz. Mark VK5EME said regular contacts have been with VK5MC, VK5KAF, VK5ACY and occasional VK3s on 144, and with VK5ZVA on 432. Bill VK5ACY on Kangaroo Island recently erected a 12-element DL6WU 2m Yagi at 19 metres high and with 100 watts has worked many VK3s plus VK6WG at Albany and VK6AS at Esperance.

Mark said Channel 5A in western Victoria is a good indicator for 2m band conditions providing the picture is received in colour and with a very strong sound carrier on 143.750MHz.

Conditions on 432 to Hershham in Victoria have been poor in the evenings and good in the mornings. The Ballarat beacon on 432.535 has been heard around 1200 to 1400 UTC, with signals to S8 but no stations worked.

Phil VK5AKK at Hallett Cove has been testing with Wally VK6WG at Albany on all bands from two metres to 1296MHz to establish the changes due to propagation variations. Ducting has been found to be very poor to Albany from north of Adelaide in the evenings and much improved after sunrise, which is at variance with conditions at Hallett Cove.

Mark VK5EME expects to operate portable from the Adelaide Hills during the summer months, probably late December through early January, operating from 2200 in the mornings and 0830 in the evenings. He will run 100 watts on 144, 10 watts on 70cm, 10 watts on 23cm and 0.5 watts on 13cm. He is

interested in working VK3 on 23cm and 13cm from his portable site. Mark also listens most mornings from 1930 to 2030 on 144.1 and 432.1, mainly in the VK3 direction, looking for random contacts. David VK3AUJ was a reliable morning signal about two years ago. VK5AKK is also considering portable operation this summer.

## EME Information

Chris VK5MC advised of two contest weekends, 26-27 October and 23-24 November with bands from six metres to 10GHz in use. During the October tests nothing was heard at Meningie, but VK5EME heard W5UN on 27/10 and W5UN and KB8RQ on 28/10. VK5AKM heard CW on 432.007.

## Closure

Space has run out so I must close. With Es to the fore as you read this, operators can enter the Ross Hull Memorial Contest and should be able to renew former friendships. Don't overlook Es 2m contacts when the skip shortens on six metres.

Best wishes to all readers for Christmas and new year. This month I start my 23rd year of writing this column. My sincere thanks to all those who have supported me with information over the years.

Closing with two thoughts for the month: "Don't knock the weather. If it didn't change once in a while, nine out of 10 people couldn't start a conversation," and "You may think seat belts are uncomfortable — but have you ever tried a stretcher?". 73 from The Voice by The Lake. ar

## FTAC NOTES

JOHN MARTIN VK3ZJC FTAC CHAIRMAN

## Yet More Records

The first national long-path record for 50MHz, set by VK3OT and 9Q6EE, has been broken. A long-path contact between VK6JQ in Broome, and TL6MB in the Central African Republic, has been verified, the distance being 28,397km.

The new VK4 long-path record, set by VK4ZAZ and 6W1QC, has now been superseded. On the same day he worked Luncs VK4ZAZ, 6W1QC also worked Joan VK4BJE and Bill VK4KHZ. The distance is 21,754km. Congratulations especially to Joan for becoming the first YL to hold a VHF/UHF record.

A new Digital Modes record has been set by Robert Black VK2BHR, who worked Yutaka Katoh JH1WHS on 28 April 1991, a distance of 7320km. Yutaka must be very active on RTTY as this is his third consecutive new Digital Modes record. Congratulations to him and to Robert, who also set a new VK2 6m record recently with the very active 6W1QC.

This month there is also a new national

EME record for the 2m band. Arie Groen VK3AMZ has broken the record set 26 years ago by working VE1BVL on 22/6/91, a distance of 17,683km. Congratulations Arie.

## Rumours

The new long-path records on six metres have caused some controversy, and I believe there have been some rumours about the validity of several recent 6m records. A few points to set the record straight:

1. The verification requirements for records are quite stringent, including evidence required to determine whether or not the contact was made by long path. No record is granted unless there is absolutely no doubt the contact was made as claimed.
2. Verification of long-path records takes into account conditions, time of day, other stations heard or worked, corroboration from other stations and known characteristics of the path.
3. The short path records still stand. My

apologies for omitting them from the last Call Book listing and possibly giving offence to the holders of those records. This oversight will be corrected when the list is published again in February AR.

## 50MHz Beacons

Thanks to VK3TAF, VK2JBR, VK4BRG, VK4JHM, VK5LP, VK6HK and WESTAC for comments received on the 50MHz beacon proposal.

Federal Council has approved a proposal to make 50MHz beacon frequencies available immediately in the eastern states. One frequency per call area will be used initially, with the possibility of extra — possibly co-channel — beacons later. VK3SDX is already operating on 50.0535 and VK7RSB is on 50.057. Frequencies for other call areas will be organised as soon as possible.

Beacon frequencies will be co-ordinated nationally to minimise interference. Future allocations within the DX window will be for eastern state beacons only.

Federal Council has formally adopted the following beacon standards:

- (a) Beacons should transmit 24 hours per day.

- (b) Beacons should identify at least twice per minute.
- (c) Identification content should be minimal, either call sign only or call sign plus locator.
- (d) The period between identifications must be key down.

- (e) Identification should be 850Hz FSK; however, keyed CW (A1A) is also acceptable on frequencies below 52MHz.
- (f) Antenna polarisation should be horizontal.
- (g) Frequency accuracy and stability should, if possible, be one part in 10<sup>6</sup>.

- (h) Beacon ERP should be consistent with user power levels on the band in question.
- (i) Beacon frequency spacing may be as close as 1kHz.
- (j) Frequency sharing may be used on 50MHz if the beacons concerned are in null zones to each other. ar

## ALARA

**JENNY ADAMS VK3MDR — 70 KANGAROO GROUND RD, WATTLE GLEN 3096**

Goodness! Where has the year flown? It seems like only last week I took on this job. Season's greetings to all; may you have a peaceful and joyous Christmas.

This month saw the passing of a well-known and loved ALARA member, Joy VK2EBX.

Thank you to Meg VK5AOV for compiling the following with information supplied by Joy's daughter Janet, Doug Tamblin VK5PDT, Marilyn Syme VK3DMS, Christine Taylor VK5CTY and Neville Wilds VK2OR.

### Joy Collis VK2EBX

(formerly VK5JVJ and VK2EJC)

Born in London, Joy migrated to Australia in 1950. Here she met her future husband, Dan, married and raised a family of three boys and three girls in various somewhat remote areas of rural Victoria and New South Wales. She taught her children by correspondence until the family eventually moved to the Welling-  
ton region in 1970.

It was soon after this that she was introduced to CB radio — an interest which soon led her on to amateur radio, gaining her full licence a few years later.

Joy also held the position of clerical assistant at the Yeoval Central School from

1961, and during those years she began to write poetry, winning the Brownie Swagman Award for bush verse in Winton, Queensland, in 1963. Her verse has also been published in *Amateur Radio* and the *Alara Newsletter*, giving much pleasure to her readers!

Joy was a wonderful ambassador for amateur radio, both privately and as an active member of the Orange Amateur Radio Club, of which she was an Honorary Life Member, and of course for Alara. From November 1967 until last year when she became unable to continue for health reasons, Joy was the Alara publicity officer and *Amateur Radio* correspondent, tasks which she undertook willingly and with flair.

Before her illness prevented her from travelling, Joy and Dan were able to visit DX friends in Canada and England, as well as revisiting her childhood haunts. Such was her charisma that she had made friends all over the world.

Joy had a challenging life — living through war-torn London, the illness and death of her mother before she was 20, raising six children under rather difficult circumstances in the early years, the death of two sons (1990 and 1995) and of her husband Dan in 1991, and most recently

fighting cancer. Her faith in God and her positive attitude brought her through those trials, not without scars, but with hope and a sense of humour. She was always regarded by her children with love, fondness and respect as a good mother.

Joy's charming manner, dignified bearing and genuine interest in her friends and associates endeared her to all. She will be remembered with affection and respect by all who were privileged to know her.

## Snippets

Maxie DJ4YL and her sister, from all accounts, enjoyed their visit to Australia. In Sydney, Dorothy VK2DDB entertained them with a trip to Ku-ring-gai Chase, where they saw native flora and fauna, including a goanna, at very close range, followed by a barbecue lunch. In Victoria, she had a luncheon with some of the VK3 ladies, followed by a trip to Frankston with Erica VK3AEB.

Christine VK5CTY also had a luncheon with the VK3 ladies on her visit to Melbourne in September. It is nice to be able to put a face to a voice!

Yes, we did talk a lot. Congratulations to Anne Minter VK4ANN on receiving WIAQ merit badge.

Thank you to Dorothy VK2DDB for writing this column for the past four months.

More next month. ar

## AMSAT

**BILL MAGNUSSON VK3JT — 359 WILLIAMSTOWN RD YARRAVILLE 3013**

**PACKET: VK3JT@VK3BBS**

### National Co-ordinator

Graham Hatch/VK5AGR

Packet VK5AGR@VK5WI

Please take note of the AMSAT information nets:

**AMSAT AUSTRALIA net:**

Control station VK5AGR

Check-ins commence at 0945z

on Sunday nights

Bulletin commences at 1000z

Frequencies 3.685MHz or 7.064MHz. At present 7.064MHz is used.

**AMSAT SW Pacific net:**

2200z Saturday on 14.282MHz.

Experienced satellite users and newcomers alike are welcome on the nets. A large body of experience is on hand to answer ques-

ries. Listen to the WIA Divisional broadcasts for regular AMSAT information.

**AMSAT Australia Newsletter and Computer Software:**

Satellite users, whether experienced or newcomers, will benefit by subscribing to the AMSAT Australia newsletter and software service. The newsletter is published monthly by Graham VK5AGR. Subscription is \$20 payable to AMSAT Australia, addressed as follows:

AMSAT Australia

GPO Box 2141

Melbourne 3001

The newsletter provides up-to-date information on all current and planned satellite activity. Graham also provides a first class software service for satellite users. New soft-

ware is reviewed regularly in the newsletter.

## MIR News

I've been getting a lot of requests for information on MIR activity (or lack of activity). It appears they've been having some trouble with their TNC and, because of this, activity has been restricted to voice QSOs, mainly with VK3CFI to help sort out the problem. Maggie reports that Sergei managed to leave a message in her PMS a few days ago, so it may not be too long before the problem is sorted out and the system may well be back on line when you read this. Keep listening on 145.500MHz.

Remember also that operating schedules on board MIR are subject to change and they have a very busy day-to-day routine.

The other reason why activity appears to lapse periodically is they keep Moscow time for all on-board activities. This means that, as our local access times slip back daily, their recreation periods don't coincide with the passes over VK. MIR will appear most active



to us when these recreation periods coincide with early to late evenings our time. Don't despair, the orbit of MIR is such that the cycles will repeat every couple of months. When operational, the packet system is normally turned on for continuous activity. It can be used for PMS message forwarding or digitizing around VK/ZL.

## UoSat News

Following a period of inactivity the news bulletins on UoSat-2 (UO-11) are to be revamped. With the advent of the new UoSats there has been a lot of activity at the University of Surrey recently, and old faithful UO-11 has been neglected to some extent. A new news co-ordinator has been recruited and we can look forward to regular news updates on UoSat-2 from now on. Rumour has it that a new UoSat is planned for launch in 1992. It will be similar to UO-14 with an open access 9600 baud BBS and no doubt using broadcast protocol. If this is successful we will have five operating digital mode satellites in orbit.

## FUJI News

FO-20 has had a new software upload and is working again, mostly on digital mode. The new software is designed to make operating easier. I'd like to hear from any FUJI fans who have tried it. Is it any easier? Is it any more regular in operation?

## STS-35

In December 1990 many Australian amateurs made contact with Ron Parise, WA4SIR on mission STS-35. They'll be happy to know their QSL cards are finally being processed. The people at NASA are hoping to have them all out in a couple of months.

## OSCARs ain't OSCARS

A recent news item stated that the US Navy had "blasted" a satellite called OSCAR-22 out of the sky in a simulated test of some of its gadgetry. Don't panic, they're not practicing on us! The US Navy has long had a series of navigational satellites which they call OSCARS. Thankfully it was one of them.

## Change of BBS

Due to high noise at this QTH I've had to change to another local BBS. Please note the change to my packet address, which is now VK3JTVK3BBS.

## Satellite Activity for August 1991

### 1. Launches

The following launching announcements have been received:

Intl No	Satellite	Date	Launch Nation	Period min	Apog km	Prg km	Inc deg
1991 —							
063A	MOLNIYA-1	01 Aug	USSR	12H17M	40661	653	62.9
064A	STS-43	02 Aug	USA	90.6	329	309	28.4
064B	TDRS-F5	01 Aug	USA	710.3	34390	793	0.0
065A	INTELSAT 6 F-5	14 Aug	ESA	743.8	35789	5881	3.3
066A	METEOR 3-5	15 Aug	USSR	109.4	1219	1196	82.6
067A	PROGRESS M-9	20 Aug	USSR	88.6	246	192	51.6
068A	RESURS-F13	21 Aug	USSR	88.6	272	195	82.3
069A	COSMOS 2154	22 Aug	USSR	104.9	1021	991	82.9
060A	BS-SB	25 AUG	Japan	664.0	37491	179	28.7

### 2. Returns

During the period 59 objects decayed, including the following satellites

1990-081C	PRC 32	24 Jul
1991-038A	PROGRESS M-8	16 Aug
1991-048A	COSMOS 2152	23 Jul
1991-052A	RESURS-F12	08 Aug
1991-054A	STS-43	11 Aug

### 3. Notes

1991-056A Meteor 3-5

This meteorological satellite was launched by the USSR using the TSIKLON booster rocket. The spacecraft also carries a US built Total Ozone Mapping Spectrometer (TOMS) on a joint US and Soviet mission to study the ozone layer.

BOB ARNOLD VK3ZBB

## EDUCATION NOTES

BRENDA EDMONDS VK3KT - PO Box 445 BLACKBURN 3130

WIA FEDERAL EDUCATION CO-ORDINATOR.

At the quarterly Executive meeting in October, the first formal steps were taken to set up a committee to monitor and manage the examination question banks. The establishment of this committee was required under the terms of the agreement with DoTC.

Those who have taken any part in producing examination papers under the first devolved system are aware that the existing banks as supplied by DoTC are inadequate and have an uneven distribution of questions across the syllabus. It is the aim of the committee to extend the scope of the banks by adding more questions to the sections which are under-represented, and to improve the quality of the banks by deleting controversial questions or rewriting them to an approved standard.

It was decided that before any question can be added to the bank it must be approved by at least three suitably qualified persons.

Proposed amendments must be approved similarly. It is expected the additions or amendments will be submitted to DoTC for final approval.

This is going to involve considerable time and effort on the part of the committee. Possible questions provided by any member will have to be referenced to the appropriate section of the syllabus and then circulated to at least two other committee members. Only those passing all three will be eligible to be added. Any which do not get the seal of approval will be put aside to be reworked for later use as, at this stage, the top priority is to extend the range of questions.

I have asked previously in this column for any readers who have a collection of questions available to please consider submitting them for possible use. I will be acting as Secretary for the committee, and will be very happy to receive any or all that may be sent. I have

recently been through the banks to find the areas of greatest need, so questions on the following topics would be most welcome:

- \* Any regulations questions;
- \* Novice level — any safety questions; electromagnetism; basic electron flow distinction between resistance and impedance; quality factor; piezoelectric effect; diode and zener diode theory; applications of amplifier and voltage regulator ICs; practical limitations of use of solid state devices; FM transmission and reception; common use circuitry in transceivers; the sunspot cycle; methods of feeding antennas; recognition of symptoms of interference.
- \* AOC level — any safety questions; sources of EMF other than cells; electromagnetism; shielding in transformers;

power supply filters;  
voltage regulation;  
point contact diodes;  
PLL VFOs;  
oscillator stability;  
speech processing system  
principles;  
VHF/UHF techniques;  
direct conversion receivers;  
directive antennas;  
mobile antennas;

dummy loads;  
solar activity;  
ATV/SSV.

A note of warning to instructors and candidates: please do not use this list as a guide to topics that can be omitted from study on the basis that the banks are short of questions on them. I have selected areas where I see most need for improvement, as well as areas of deficiency. Already questions have been included which were not supplied by DoTC. But

there is still much to be done, and any assistance will be greatly appreciated.

I am happy to report that most of those who have used the WIA Exam Service so far have found the system is working smoothly and efficiently. It does seem, though, that extra time must be allowed when ordering examination materials to compensate for possible slow action on the part of Australia Post.

May I take this opportunity to wish all readers the compliments of the season, and my best wishes for the forthcoming year. ar

## HOW'S DX

STEPHEN PALL VK2PS - PO BOX 93, DURAL 2158

By the time you read this, we will have reached the last month of this very eventful year. Politically there were a number of significant changes in the world. We even had a short war in the desert.

The amateur fraternity has enjoyed one of the most exciting years in its DX history. Countries from where amateur activity was forbidden or non-existent in the past 10 to 20 years, have suddenly changed their outlook on the world. Checking through my notes of the past 12 months, I can see at least two dozen significant DX call signs, out of which the activities from Afghanistan (YA), Ethiopia (ET), Bangladesh (S2), Myanmar (XYO) and Albania (ZA) stand out. There was also a Saint Felix (XQO), Canton Island (T31), Saint Peter and Saint Paul Rocks (PYOS), Pagalu (Annabon) (SCO) Tromelin, Glorioso and a St Brand Island operation, just to name a few.

Where do we go next? This is the title of a book written by Martti OH2BH about his DX activities, which clearly poses the question. Once one reached the DXCC Honour Roll, what do you do next? Turn to the IOTA movement and collect island activity by the hundreds? Work DXCC via satellites? Work three-band DXCC using the WARC bands only?

I suspect the majority of us will continue to work DX the same way as before. Hopefully a little wiser, with a more tolerant outlook on life. Hopefully with increased skills in operating techniques, but being ever grateful to the pioneers of the past 160 years whose scientific and sometimes accidental discovery enabled us to enjoy this fantastic hobby of ours. May I wish you the compliments of the season and a happy, healthy and prosperous new year!

### Bangladesh — S2

On 29 August the Bangladeshi T&T Board made the decision to introduce amateur radio service to that country (see AR May, June, Sept and Oct issues). Jim VK9NS, through his previous stay in that country, has contributed in a very positive way to the establishment of the amateur service. He worked on the draft rules and regulations and the T&T Board used that information to establish the

amateur radio proposal, which was then presented to the Bangladeshi Government for final approval. It is hoped that by December the amateur radio service will be fully integrated into the legislative system, and by January 1992 it is expected that Bangladeshi nationals and foreigners will be able to receive licences and operate freely.

To prove the point that the "light is around the corner" the frequency division of the T&T Board has issued the first licences to two local nationals. Saif, President of the Bangladeshi Amateur Radio League (BARL), was allocated S21A, and Nazim, the Secretary of BARL, was allocated the S21B call sign. Encouraged by these decisions, Jim VK9NS and Kireti VK9NL made a formal application for issue of licences and for approval to operate from that country. Mid-October Jim and Kireti received an official invitation to visit and to operate from Bangladesh, and they also received the first call signs issued to foreign operators. S21ZA was issued to Jim, and S21ZB was issued to Kireti. The covering letter bringing the good news mentioned that these call signs were issued in recognition of the considerable contribution made by Jim to the furthering of amateur radio in Bangladesh.

The Smiths were to leave Norfolk Island on Wednesday, 23 October. However, this departure time had to be moved to the 22nd, due to a strike in Sydney which affected the transport system. They arrived in Dhaka on Thursday, 24, Friday being a Muslim holiday and the weekend busy with the CQ WW SSB Contest. Nobody expected them to be operative before 28 October, despite the fact that a CW operation would have been possible more or less immediately after arrival and setting up the station. Kireti S21ZB is a keen CW operator, and her stay was limited, as she had to return to Australia on 4 November due to a prior and unavoidable engagement.

The DX world was waiting. By 31 October rumours were circulating on various DX nets about an imminent activity by Jim from S2. Some DXers even quoted the frequency of 14147 on which Jim will appear. At around

0600 UTC on the same day, Ken VK5QW has advised the "222" net in a language circum-spect with all the refinement of diplomacy, that he received a fax at 0300 UTC from Jim, which indicated there has been a departmental "hiccup" in the scheme of things in Bangladesh. Ken quoted Jim as saying: "Do not give up hope and have faith. The relations with the T&T Board are soundly based, and the temporary difficulties will be ironed out soon."

The unexpected time delay made Kireti's activity impossible, and she returned to Australia on 4 November as originally planned. Jim intended to stay on in Bangladesh until 20 November as originally planned, unless changed circumstances dictate his movements otherwise. At the time of writing this, there is still no news of him being on air. The mystery of the East has engulfed Amateur Radio again.

### Albania — ZA

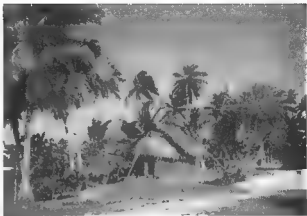
If you were interested in working Albania, I am sure by now you have succeeded in so doing. The other day I even heard a ZA calling "CQ" and there were no takers. The number of ZA stations heard on the band has multiplied since 17 September.

ZA1A was active in SSB, CW, RTTY and AMTOR mode, and closed the station on 7 October after it made over 70,000 contacts. Incidentally, the ZA1A activity was accepted by the ARRL for DXCC credit. ZA1QA and ZA1HA continued to be active, and were joined by the French operators signing ZA1XV (F6XV), ZA1ZMX (F6MXM) and ZA1ZV (F6ZV). It appears that call signs issued to foreigners by the Albanian PTT Board will start with the letter Z in the suffix. The French team left Albania on 11 October after 13,000 QSOs. According to some news reports, the ZA1A group trained 12 Albanian operators and they will soon be heard with the call signs beginning with ZA1TAA through to ZA1TAL.

Only three weeks after the ending of the ZA1A operation, the first QSL cards have already been mailed. According to those who have already received them, the cards are of beautiful design, with the traditional two-headed Albanian eagle with a golden crown on its head. There were also some new stations on the air from Albania. ZA1ZSW Scotty W7SW was active for a short period. ZA1DX



Antoine 3D2AG in his own shack at home in Suva, Fiji.



The Rotuma "shack" used by many visiting amateurs, including Antoine 3D2AG.

was operated by Zoli, who arrived back in Albania on 12 October. QSL for HA1DX to: Globex Foundation, PO Box 200/66 1751 Budapest, Hungary. During the CQ WW DX Phone contest, ZA0RS was operated by HA0DU.

The ZA1HA activity was started by Zoli HA5FP and Imre HA5HO at the end of September. This station is connected with the efforts of the Hungarian Amateur Radio Society (MRASz) to give Hungarian radio amateurs the opportunity to work from Albania. (See AR March 1991 issue). HA5HO and HA5FP have gone back to Hungary, but Zoli HA5FP returned again as ZA1DX on 12 October.

On 2 October, a new team arrived from Hungary to operate ZA1HA. They were HA4XW, HA4XG, HA5OV, HA5FA and HA6NF. This new group will try to find a permanent location for the station, and hopes to train a number of Albanian operators, who will then continue to be active using the equipment and antennas left behind by the Hungarians. The logbook of the QSOs will be computerised, and QSLing for contacts made as from 2 October will be through HA6KNB, with the appropriate SAE and return postage. The station hopes to be active on VHF and UHF bands, including satellites. QSL to HA6KNB, Radio Club Salgotarjan, Box 115, H-3101, Salgotarjan, Hungary.

## The "CQ" Worldwide DX Phone and CW Contest

These two contests took place on the weekends of 26/27 October and 23/24 November. The contest is always a good source of rare DX, usually with distinctive, and sometimes strange, prefixes, which cause a lot of headaches for many of us because of the missing QSL information. Here are a few of the exotic stations in brackets the QSL route: • HG73DX (HA5ML) • XEIL (WA3HP) • PJ9W (OH6XY) • V9AD (W3HNC) • ZME2K (ZL2IR) • P40W (N2MM), WE51/KH9 and

AD18/KH9 (Oklahoma DX Association, Box 88, Wellston, OK74881 USA) • H61T (Nicaragua) (SM0KCR) • HL9AA (N2JNZ) • PJ7A (Sint Maarten) (callbook address) • P14COM (PA3CAL) • HS0E (John K9EL) • ZK1XC (K6PBT) • J80D (W8KCF) • 9M6NA (JE1JKL) • 6I2A (Mexico X32KB) • V31DX (KF6TC) • 5V7JG (F8AJA) • 5B4BCC (DLAMDO) • C6AFT (AA6NT) • CT3M (CT3BX callbook address) • ZW5B, ZX9A, ZY5EG are all in Brazil (PY5EG) • KH0AM (JE1CKA) • ZB2X (OH2KI) • V63DX (JH7DMZ) • V47NS (W9NSZ) • ZD8Z (W6CF) • KH2S (JH4RHF) • P40T (K4PI) • V47KP (K2DOX) • 9M6RO (JH1ROJ) • 9H4H (K6NA) • J43A (SV3AQR) • P40V (AI6V) • PJ1B (K2SB) • TT0A (F9FNU) • TU2QW (F2CW) • T30A (K7EHI) • TL8IM (AC3D) • D73DX (HL1IE).

## Special Events Stations

During the year 1992, you will hear the special event station V12RC quite often. The operator will be John VK2DEJ, and his direct QSL address is: John Saunders, 8 Toni Cres, Ryde NSW 2112 Australia. The occasion for the special event station is that the Ryde Municipality, which is an inner suburb of the metropolis of Sydney, celebrates its bicentenary, and, during the year 1992, will be elevated to city status.

For those who are involved in the IOTA program (Islands On The Air), the station VK4VD will be activated from Stradbroke Island, Qld (IOTA OC-137), near Brisbane, from 2-5 January 1992. Activity will be in the SSB and CW modes, on 28-21-18 and 14MHz. QSL direct only, with return postage to VK4CRR: Bill Horner, 26 Iron St, Gympie, Qld, 4570 Australia.

## Kermadec Island — ZL8

The not-so-good news is that George ZL8GBS (see AR November) might not be able to operate at all from the island. George is an employee of the New Zealand Conserva-

tion Department, and, hearing that George has received an amateur licence, the Department has decided not to give permission to George to operate his amateur equipment from the island. The official explanation is that amateur radio caused some problems in the past on Raul Island, including "illegal landings..."

The ray of hope is now with Ron ZL1AMO who, according to unconfirmed rumours, intends to activate Kermadec Islands some time in 1992.

## Future DX Activity

- The Clipperton DX Club has announced plans for a major Clipperton Island Expedition scheduled for March 1992. Proposed call sign is FO0CI.
- Andy G4ZVJ is active in the Pacific region. He intends to go home on 16 December, but until then will be active from A35VJ, 6W1VJ KH8/G4ZVJ, and he also hopes to sign as T20VJ.
- Jacky F2CW will operate from Afghanistan as YA2CW starting from 19 October.
- Rod 5Z4BH who was active during October from the Republic of Comoros as D68RH will return to Arizona in December. However, in January he will already be in Karachi, Pakistan, and hopes to get permission to operate from there.
- The well-known Franz Josef land station 4K2OIL has closed down after 30,000 QSOs. The new operator is 4K2MAL, and QSL goes to UA4RC.
- Christine (ex-3DA0BX) and Paul (ex-3DA0BW) are now operating from Malawi as 7Q7B and 7Q7BW. QSL to N6MHZ.
- JX9EHA will stay on Jan Mayen Island until April next year. LA9EHA is the operator, and QSL goes to LA5NM.
- According to the news received from Paul AA2AV, the visit of the six-man US team to Vietnam has been delayed to January or February next year.
- 9L1US Dave will be back in the US soon.

In March 1992 he will go to Botswana A2 for a stay of three years.

## Rotuma Island 3D2

The Rotuma Island group, located at 12°30' south and 177°00' east in the Pacific Ocean, is one large volcanic island, size about 10 x 3km, with a population of approximately 3000, and is surrounded by eight small islets. The group was discovered in 1791 by British sailors while searching for the "Bounty" mutineers, and it was named as Grenville Island. By 1850, the influence of various Christian missions caused a number of religious wars among the native Polynesian population. This unstable situation ended in 1881, when the island was annexed into the then eight-year-old British Crown colony of Fiji. The religious influence is still very strong today, and the Sunday Sabbath is strictly observed. The name Rotuma in the local language means "Belief in the Church".

Rotuma gained its popularity as a new DXCC country in 1988, when a group of amateurs (K3NA, W6SZN, KN3TYL) and VK8XX activated the island for two weeks with the call sign 3D2XX, making 34,688 QSOs with 178 DXCC countries.

Soon after, 3D2RJ (ZL1BQJ) and 3D2AH (OZ1XJ) appeared in August 1989 and had 10,500 QSO, of which about 60 percent were on CW. "Bing" VK2BCH is more or less a constant visitor to the island. Nineteen-eighty-nine, 1990 and 1991 were the years of his stay on the island, of about one month duration on each occasion.

The latest expeditioner was Antoine 3D2AG, who stayed on the island for one month in July 1991.

I received a long interesting letter from Antoine detailing his experiences on the island.

Antoine used his own call sign on Rotuma, being portable, but had a special QSL card printed for the occasion to acknowledge about 4000 QSOs he made on 10 to 40 metres, on which about 75 percent was on CW.

Antoine is a 24-year-old marine biology student at the university, who used his university holiday to be active from the island. Visits by tourists to the island are not encouraged, and one has to have the permission and the invitation of the local elders before attempting to land there.

Let me share Antoine's experiences with you by quoting from his letter:

"There are no hotels or such facilities on the island, and one has to rely on the hospitality of the local population. Money has little meaning on the island, hence one has to be considerate of the local customs. Also, there is no regular power supply, and the only links with the outside world are the twice-monthly boat visits from Fijian, and a weekly flight from Nauru, Fiji. My own plans for a DXpedition to Rotuma materialised in late June 1991. Knowing a family on the island, accommodation was not a problem. Hence I packed up all my ham gear, including two solar panels for

charging a 12v car battery. "Bing" VK2BCH kindly offered the use of his generator and battery on the island, as well as his beam. Hence, with eagerness I boarded the MV "Wairua" for the two-day trip to the paradise of Rotuma Island.

While the boat journey was by no means easy (especially on one's stomach) the scenery was beautiful, and the cheerfulness of my fellow passengers was extraordinary. On the Monday morning about noon we reached the island, and the wharf at Onafu was bustling with people and vehicles (about six of them, the entire contingent of the island). After a day with my friendly hosts and a look at the marvellous white beaches at Onafu, we set out by truck to Papua, the village where the beam and radio shack of 3D2XX fame is located. Papua is situated on the south-west corner of the island, and consists of three houses. The area is noted for its beautiful scenic beach and also an underground freshwater cave which is a favourite swimming spot.

The "shack" actually consisted of a palm-front hut, with provisions for an operating table and bed. The beam was about five metres from the hut and had to be turned by the "strong-arm" method. For ground connections I opted to throw an old bicycle frame into the adjacent lagoon. The 40/80m antenna was a dipole, swung between two coconut trees at about 66 feet. The set-up worked very well, especially on 40 metres. There is no mains supply of power, and I opted to connect the two 12v panels to a car battery for daylight operation.

At night, a 240v generator was used. My operations were mostly nocturnal, owing to the poor propagation during the day. Ten metres was dead most of the time, although quite a few JAs were worked in the mornings on 14 and 28MHz. Fifteen metres was open to the States from 0000 to 0400 UTC, and I occasionally checked into the ANZA net and the "1422Z" net. The real action, though, did not begin until about 1030 UTC, when the 20m band was opening to the States. Large pile-ups were worked well into the early hours of the morning, including QSYs to 40 and 30 metres. The daily number of QSOs averaged about 300, mostly on CW. At times the generator would run out of fuel in the middle of the pile-up, and one had to switch to battery power for a solution. One night was really bad. I had to write my log, using a torch in one hand and the mike in the other. Owing to the difficulty of turning the beam, not too many Europeans were worked, but I did get through to most parts of the world. As far as living conditions went, the shack sported a wooden bed plus mosquito net, which was very useful. At night, all sorts of bugs and rats prowled the hut; sometimes it was quite scary. Overall, the expedition was a success, and I hope many operators were happy to get a "new one" as a result...."

writes Antoine, concluding his letter. Antoine indicated that he will return to Rotuma in December 1991, but his time will be devoted to his university research studies, which will leave no time for amateur activity.

## Interesting QSOs and QSL Information

Note: Call sign, name, frequency, mode, UTC, month.

HP1CDW-Henry-21210-SSB-0418-Sept. QSL to PO Box 10745, Panama 4, Panama.

D44BC-Julio-21205-SSB-0457-Sept. QSL to Julio S Vera Cruz, Box 36, Mindelo, Cape Verde Islands.

9Y4KB-Brian-21205-SSB-0517-Sept. QSL to Brian Eligon, 34 Lucas Hill, Mallick, Trinidad.

XU0JA-21040-CW-0010-Oct. QSL to JA1NUT, Sin Onishawa 200-9, Naka, Mohka, Tochigi, Japan.

8V0HNU-14001-CW-0700-Oct. QSL to P6FNU (direct only) Antoine Baldeck, Box 14, F-91291, Arpaizon, Cedex, France.

A35JL-Lee-21022-CW-0025-Sept. QSL to KEGXJ, Box 44, Bonita, CA9002, USA.

FY5FP-Chris-14016-CW-0440-Oct. QSL to ON42D, Leon Donner, Rue Gaston Dubois 6, B-1428, Brains I Alleud, BT Belgium.

X3UUI-Harry-14195-SSB-1259-Sept. QSL to RA3AUU, Harry Booklan, Box 18, 109457 Moscow, Russia.

8R1RBF-Richard-14222-SSB-0703-Sept. QSL to Richard B Fields, Box 10932, Georgetown, Guyana.

VP9WS-Rose(YL)-14191-SSB-1125t. QSL to Sept. QSL to WB2YQH.

JW0GB-Julia(HL)-14228-SSB-1207-Sept. QSL to Laila McClain, Box 445, N-9170, Longyearbyen, Norway.

ZA12XV-Paul-14222-SSB-0510-Oct. QSL to P6EXV, Paul Granger, 4 Impasse Du Doyen Henri, Vio, F-33400 Talence, France.

CN8FR-Idres-14222-SSB-0707-Oct. QSL to Box 990, CP-40400, Fes, Morocco.

XF3RGS-Salvatore-21205-0601-Oct. QSL to Box 1, Cancun Q Roo, 77505, Mexico.

EA9QD-Toni-14057-CW-0715-Oct. QSL via the Bureau.

5Z4FM-Jim-14013-CW-1410-Oct. QSL to Box 39773, Nairobi, Kenya.

D68RH-Rod-21205-SSB-0535-Oct. QSL to KE3A William G Kessinger, 2521 Sharon Circle, Sunderland, MD 20689 USA.

V31UN-Peter-14225-Oct. QSL to KA6V Joan E Branson, 93787 Dorset, Junction City, OR 97448 USA.

Y1IRJ-Rashed-14253-SSB-0622-Oct. QSL to Box 7147, Baghdad, Iraq.

W6RO-Jim-on the "Queen Mary", 14230-SSB-0537-Sept. QSL to WB6FNI James W Young, 1057 Apple St, PO Box 576, Wrightwood, CA 92397 USA.

## RTTY News

There was a lot of DX activity on the bands during October, including the activity created by the CQWW RTTY Contest. Here are some contacts as supplied by Syd VK2SD.

- \* KP2N-14087-0535Z. QSL to WA4WIP.
- \* C9RKL-14082-1317Z. QSL to Kurt Nygren, Box 2524, Maputo, Mozambique.
- \* 6W6JX-20805-1005Z. QSL to Box 10, Kaolak, Senegal, Africa.
- \* VK4KW-14082-2329Z. QSL to WB2LCH.
- \* RA2FB-14085-0907Z. QSL to Box 261, Kaliningrad, Soviet SK, 23877 USSR.
- \* ZK1AP-14087-0608Z. QSL to Box 494, Raratonga, Cook Islands.

- PJ8UQ-14081-0328Z. QSL to W3HNE.
- SV0DV9-14085-0356Z. QSL to WD4TDB.
- CT3M-14085-1556Z. QSL to DJ9QT.
- HV3SJ-21091-1602Z. QSL to 10AOF.
- OD5SK-14085-1604Z. QSL to KB5RA.

## From Here and There and Everywhere

- "Murphy" never sleeps and he reappears from time to time. The Spratly Island operation of Romeo (UB5JRR or 3W3RR) was under the call sign of 1S1RR and not under 1S1RR as indicated in the November issue of AR.
- During the weekend of 19-20 October, if you listened around the frequencies of 3590, 7090, 14190, 21190 and 28590kHz, you would have heard quite a number of young voices chatting about themselves, about hobbies, groups, Rovers, Guides, leaders. Yes, JOTA (Jamboree on the Air) was active again. From reports so far received, it was a great success. Last year 544,527 people world-wide participated in JOTA. Special thanks are due to the many amateur operators who willing offered their stations and their time for this very worthwhile youth project.
- The KP2A/KP5 Desecheo Island cards started to arrive in VK in the last days of October.
- News at hand indicates that ZS6AEN, who was scheduled to be on Gough Island ZD9, will not be going there.
- Jackie 3B8CF/3B7 returned to Mauritius after having made 17,000 QSOs on St Brandon Island.
- FFOXX is located in Marseilles, France, and it is a special call for the Clipperton DX Club.
- Jack T30JH was very busy professionally in the past months, which is the reason he was absent from the bands. Jack advised me that he was flying to Ponsop on the November and hoped to be active as V6EJH. Later he proceeds to Kosrae Island, then back to Nauru and Kiribati.
- Bing VK2BCH, after a lengthy Rotuma activity, moved to Tuvalu on 8 October and was active as T20XV. He closed down that operation on 20 October and returned to Forster, NSW.
- 5J300/D1 is a Colombian special call for

the commemoration of the 500th year of the discovery of the Americas.

- Heard Jim W3AJR saying on the band that he bought his first callbook in 1940. It was of only one volume and the price was \$1. According to him, it was only one finger-width thick, and contained all the US and the rest of the world's call signs. The present callbook is of two volumes, each 60mm thick, and the price of both books is 60 times the 1940 price.
- Austin VK5WO sent me the latest list of the VK stations on the ARRL DXCC Honour Roll at 30 March 1991. The first number represents the present country total. The second number includes deleted countries in addition to the present ones. Open/Mixed: VK6HD 321/342, VK5WO 320/352, VK3YL 319/357, VK4QM 313/364. Phone: VK6RU 322/372, VK5WO 320/349, VK6HD 320/340, VK4LC 319/354, VK6LK 319/336, VK9NS 316/317, VK5MS 315/362. There are no VK stations on the CW Honour Roll. When this list was compiled there were only 323 countries on the list, but, as from 1 September, with the addition of Penguin Islands, the total is 323.
- The DX Advisory Committee of the ARRL voted unanimously against recommending a new country status for Jarvis Island. The AH3CK/KH5J QSL cards will be accepted for Jarvis Island. The AH3CK/KH5J QSL cards will be accepted for DXCC credit for Palmyra Island KH5.
- The Armenian operators will use the 4J3, 4J4, 4J7 and 4J8 prefixes from 21 September until 31 December this year.

## QSLs Received

Note: W=week; M=month; Y=year; FM=from; MGR=manager and his call; OP=operator and/or his call.

Direct cards received: TL8IM (3W FM OP) — 2P2MLD (5W FM MGR KC4DWI) — 7Q7JL (5W FM OP) — AA4NP/AH9 (11M FM OP) on return to US — KC6GV (5M FM MGR LA6ZJH) — HC8GR (1M FM OP) — VU2CVP (3M FM OP) — 3Z2AG (Rotuma 2M FM OP) — F5/KB4VHV (3M FM OP) — 3C1MB (3M FM MGR EA7KF).

Bureau cards received: IL3/IK3HXB (1Y 11M FM OP) — O4ACAN (9M FM OP) —

GJ2LU (1Y FM OP) — DK1CE/H44 (1Y 3M FM MGR FJ9ZB) — H44MS (1Y 3M FM OP) — PJ2WG (10M FM OP) — T30NAD (1Y 3M FM MGR JO1CRA) — YJ0AMH (10M FM MGR KF7PG) — ZC4BOB (10M FM OP) — ZL7TZ (12M FM OP).

## Thank You ...

Once again, many thanks to all my helpers who supplied me with information by letter, photo and phone call. Your help is very much appreciated. Special thank you to: VK2CX — VK2DEJ — VK2ENU — VK2KPU — VK2QL — VK2SG — VK3DD — VK4CRR — VK4DA — VK4OH — VK4UA — VK5QW — VK5WO — VK9NS — HA6NF — 3D2AG, and the following publications: QEZ DX, The DX Bulletin and the DX News Sheet.

## Late News

It was reported on the bands, and it even appeared in various DX publications, that VK0WW is active on 14010 and he asks the QSL cards to be sent via the Bureau. Others on the bands reported that VK0AI is active from Heard Island. This news is a surprise for the VK DX community, as we have no information about these stations. Neil VK6NE, who is the Federal QSL Manager for VK9 and VK0 advised me that, according to investigations which he carried out with the relevant authorities, VK0WW is not known on Macquarie Island, and no licence was issued to VK0AI. It appears the two stations are "slims". Please ignore them and do not QSL.

## Late Late News

Bangladesh message just received from Ken VK5QW on 11 November. Jim VK9NS advises that the licensing system in Bangladesh has now been established and that a recommendation will go before the government. It is expected the licensing system will be authorised within a few days, which will make amateur radio legal in Bangladesh.

Jim expected to have permission on 12 November to operate under the call sign of S21U, which is the official call sign of the Bangladesh P&T authority.

Jim intends to leave Bangladesh on 20 November, but there is a possibility he might get a visa extension for one week.

AR

**Have you advised the WIA Executive Office of your new call sign? Use the form on the reverse of the Amateur Radio address flysheet.**

## REPEATER LINK

WILL MCGHIE VK6UU @ VK6BBS - 21 WATERLOO CRS, LESMURDIE 6076

## Audio Mixer

Repeaters mix several sources of audio to produce the output that is heard on air. Far more than the casual observer may think.

As many as eight or more audio sources may have to be mixed.

1. Repeater's receiver audio

2. Morse code ident
3. Time-out tone audio
4. WIA News audio
5. Encoded CTCSS tone
6. Link input audio
7. Time-out reset tone
8. Special function status tones (flat battery etc).

Your repeater may have few of the audio sources listed, but there is always a need for an audio mixer in a repeater. The circuit shown has been used in several VK6 repeaters with excellent results. This circuit is used to drive a true FM varicap diode in the transmitter. A voltage swing of approximately +2 volts is required with low distortion.

Distortion better than -50dB (0.1%)

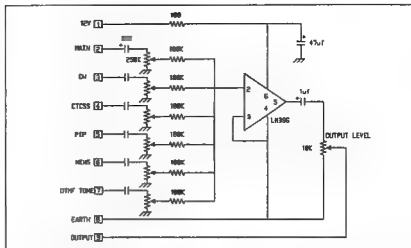
High output level, +5 volt swing from 12 volt supply

Voltage gain set at 20

Low current drain, 5mA

Simple to construct

Any number of inputs can be added. The circuit shows six. The LM386 is a low power speaker amplifier and suits this application. The values of the input pots can be 100k to 500k. The 1µF input capacitors are required only if the incoming audio has a DC component.



## SPOTLIGHT ON SWLING

ROBIN L HARWOOD VK7RH - 52 CONNAUGHT CRES, WEST LAUNCESTON 7250

Well, another momentous year has finally come to an end. Let us look back and retrospectively examine the past 12 months. First off, we had the Gulf War. The Americans started bombing Baghdad and other Iraqi cities on 17 January. For some weeks prior to this, we were able to hear, quite easily on shortwave, the build-up of American and other Allied military forces within Saudi Arabia and nearby Gulf states.

A furious propaganda war broke out on shortwave prior to the commencement of hostilities, and lasted well after they finally ceased. Several clandestine operations emerged from within Saudi Arabia and other mid-east locations, broadcasting to Iraq and occupied Kuwait. The Baghdad regime countered this with deliberate jamming of the broadcasts directed to Iraq. This was easy to spot, as the jamming had, and still has, a very distinctive sound, being quickly referred to as the bubble jammer. It appears on top of Arabic broadcasts, including those not normally targeted on Iraq. When the aerial bombardment commenced, all HF transmitter sites in Iraq and Kuwait were identified and destroyed. This removed the bubble jammer until recently when it began to cause problems once more.

Some listeners were very fortunate to hear Tactical Air Traffic on HF, especially around 11.1 to 11.25MHz. As well, the British Forces Broadcasting Service was heard here from BBC senders in Cyprus and the UK. They broadcast mainly cheerios from home to the troops. The Ground Offensive for the Liberation of Kuwait lasted only 100 hours, and again shortwave radio very rapidly provided news of events.

Radio Baghdad was silenced and has not yet reappeared with any significant signals. Neither have the Radio Kuwait senders, which were previously easily heard on HF worldwide. I guess there were more pressing problems in the rebuilding of the small Gulf nation after Iraqi plunder and excesses.

In April, Radio Canada International virtually closed its shortwave programming. Although still operational, it is at a much reduced level, with relays of the CBC domestic service in English and French. The only foreign-language services are in Russian, Ukrainian, Czech, Spanish, Chinese and Arabic. Popular English presenter, Ian McFarland, who hosted the SWL program, is now on Radio Japan's English service.

Other broadcasters to make severe programming cutbacks in their output, due to budgetary cutbacks, have been Radio Tirana in Albania, Radio Budapest in Hungary, the English Service of Kol Israel in Jerusalem, and the Asian and European sections of Radio Moscow have also been severely cut back. One major station that disappeared was "Radio Peace and Progress" from Moscow.

As well, the number of clandestine broadcasting stations has also markedly declined, especially in Africa. Ethiopia threw off its Marxist yoke and its support of rebel political groups in adjoining countries. They gave program time to these various groups over their senders. Also, the number of regional outlets on shortwave from within Central and South America appears to be slowly declining. There also seems to be less Indonesian outlets within the tropical bands, although the number of legal and illegal HF SSB networks across the HF spectrum, located in

Indonesia, have increased, particularly within exclusive allocations such as aeronautical and amateur.

At the time I am compiling this column the civil war within the Balkans between Serbia and Croatia is at a stalemate. I realise European monitors have had numerous advantages over monitors elsewhere, because electronic activities on MW and FM have so far dominated. The Serbian-controlled Radio Yugoslavia has reportedly been observed but is, not surprisingly, very erratic in its output.

But the major development for the year must be the attempted coup in Moscow on 19-21 August. Listeners were startled by the re-imposition of censored broadcasts and ideological programming for three days. But, as we now know, the coup failed dimly. Even Gorbachev was able to keep abreast of what was happening on the streets of Moscow. Although temporarily imprisoned in his Crimean dacha, he and his loyal aides hastily erected a shortwave receiver and antenna, tuning to the BBC Russian Service for the news. The Communist Party virtually disappeared overnight, in the public's eyes being discredited in influence and prestige.

The external services of Radio Moscow also emerged from the attempted coup with their credibility somewhat tarnished.

Since the momentous changes within the former USSR, we have seen major changes in the broadcasting organisations. Independent stations and networks have rapidly filled the void across the various sovereign republics. The Baltic countries of Estonia, Latvia and Lithuania have won their independence from Moscow. They had to rapidly develop their own shortwave senders, as the relays that were formerly provided by senders located elsewhere in the Soviet Union were no longer available. Signals are, I believe, best in the Nordic countries at this stage.

I would predict that events in the former

Soviet Union possibly won't impact as in previous times. Already several foreign broadcasters have commenced airing programs over Soviet domestic networks, obviating the need for HF broadcasting.

I believe the World Radio Administrative Conference (WARC '92) in Barcelona will become a significant milestone in the history of HF telecommunications. Clearly, with the

virtual disappearance of jamming as a result of Cold War rivalries, and with financial cutbacks to international broadcasting and programming, perhaps there could be less demand in the developed world for HF broadcasting allocations. I believe a demand, particularly in Asia and Africa, for shortwave broadcasting will still exist.

Propagation conditions have been very poor

of late. Just lately I have noted shortwave fadeouts often disrupt communications. This is the case on the decline of the sunspot cycle.

Well, that is all for December and for 1991. Don't forget, if you wish to send messages via packet BBS, the route now is as follows: VK7RH @ VK7BBS Launceston TAS AUS OC.

MF

## POUNDING BRASS

GILBERT GRIFFITH VK3CQ - 7 CHURCH ST BRIGHT 3741

*The information on learning the code featured this month was kindly sent to me by Jim Gray VK2DPU and is from the Marconi School of Wireless way back when its address was in 47 York St, Sydney, and the phone number was 2 02331. There is no date on the (copied) publication so I wonder if anyone knows when the booklet was produced.*

*These days there are many ways of speeding up the learning process, from tape cassettes, which would have been undreamed of then (as would have tape recorders), to the latest computer programs which are "intelligent" enough to monitor a student's progress and alter the lessons accordingly.*

*My own learning was done from cassette using the well known EISH5 formula, and I can now see how this process was initiated, because the Marconi School used the EISH5 formula for its sending practice in this publication, the learning of the alphabet was just that, with no preference to groups of letters.*

*What follows are only excerpts which I hope you will find interesting and maybe helpful as well; there is not enough space to print the lot in this column.*

### Introduction

Before commencing to learn telegraphy, the student should carefully read and understand the instructions contained herein. He should always practice strictly in accordance with them.

A number of methods of training are or have been in general use but, after careful investigation of all these methods, and in the light of many years of practical experience in this subject, we have adopted the methods set out as the most efficient.

Learning telegraphy requires many hours of practice, which are only lengthened by inaccurate procedure or careless or slovenly work. Five minutes' neglect of simple rules may undo an hour's practice. Ten minutes may undo the benefit if many hours of conscientious work.

... Handwriting is very important and, as the student must spend many hours in practice, concentration on this point will not only improve his handwriting but, for reasons explained later, will greatly assist in learning

the code.

The modern method of learning morse relies on the principle of training the subconscious mind to recognise the symbol, not as a series of dots and dashes, but as a letter or numeral, and it is obvious that at high speeds the action of reception and writing are done without conscious effort. We might compare this with a person reading a book. He is so trained that while he unconsciously recognises a letter, he consciously reads the word as one complete unit, although the subconscious mind actually checks every letter. By concentrating on handwriting, as previously indicated, the student does not think of the morse, therefore the conscious and subconscious minds are in step and progress will be much faster ...

If the student has not previously undertaken morse training, the following procedure should be followed until he is able to receive morse signals at about five words per minute.

### How to Learn Morse Code

Rule lines on the paper, dividing the sheet into five columns. Look up the morse alphabet on page B-3 and it will be noted the symbol for A is "d'dah" (pronounced "dit dah"). The student should sing "dit dah" to himself (preferably aloud) and then write A in the left-hand corner of the first square. Do not commence to block until the symbol has been completed. Repeat this 25 times, writing five letters in each square, and keeping the letters to the left-hand side so that if the vertical lines were removed there would be at least a double space between the last letter in one group and the first letter in the net. Do each letter in the same way, including the numerals. Practice this until able to sing the alphabet and numerals without reference to the code. Carry on singing each letter five times, making a complete group of each. If any hesitation is experienced, the student should revert to the earlier procedure of singing each letter 25 times for several complete alphabets. Do not write the letter or numeral until the symbol has been completed. For instance, if the student writes the D before the last "dit" is sent, this is equivalent to commencing to write a word before pronunciation is complete, and

leads to the common fault in telegraphy called "journalising", which is due to anticipating a letter or word. In the above example, the sender may be sending the letter B, the student has commenced to write D when the extra dit is received, and he has to change the letter to B. This causes confusion and wastes a lot of practice ...

The student may by diligent practice sing to the speed of up to 10wpm without having heard a signal. After attaining this speed, or before, the student should have access to morse receiving by means of a buzzer, and all future practice should follow along the lines of signal reception ...

In undertaking telegraphy instruction the following order should be followed:

1. The student should make himself thoroughly conversant with the method of blocking code letters and numerals (capitals). It is not necessary to practise blocking separately but to read the section dealing with blocking and understanding the reasons underlying the system.
2. Learn Morse Code in the manner prescribed, ie "singing" until able to recognise all morse symbols without difficulty. Practise reception of the code until able to receive about 8wpm.
3. Concurrently with singing practice, but after the student can recognise all symbols, commence sending practice in accordance with the directions contained herein.
4. When able to receive code at about 8wpm carefully read and understand the instructions for writing Plain Language, and proceed to practise receiving plain language.
5. Divide receiving practice into periods of Plain Language and Code.
6. Become conversant with test conditions. The method of conducting tests is set out herein. Always remember that accuracy is paramount and, whilst a number of errors may be permitted in a test, in commercial telegraphy errors are not permitted.

*Next month I hope to continue with more from this booklet in the form of learning to send Morse Code.*

ar

**Don't buy stolen equipment -  
check the serial number  
against the WIA stolen  
equipment register first**

# INTRUDER WATCH

GORDON LOVEDAY VK4KAL - ARIEMORE, RUBYVALE 4702

WIA IARU MS Summary September 1991

Date	Time UTC	Frequency in kHz "M" or "E"	Call sign If Heard	Mode	Time on	Logs X	Details of Traffic If Known any other Information
230991	1303	7003	V	Air			Beacon
2009	1100	7007/8		J3E		5	Asian traffic 2-way
2409	0001	7009		F1B		2	11111111 stated
2009	1125	7012		J3E		7	B/caster Asian language
2908	0915	7015/7016		F1B/99W		2	Would like shift please
300991	1020+	10107		ASCE?			B/cast in Spanish/next transmit
2209	0951	14067	UMS	F1B +A1A			1st logging on this freq
230891	0800	14023.5		F1B	24hrs	2	250Hz shift
1509	0850+	14048	R Aust	ASE			Suspicious missing?
mnl	1105	14044/7		J3E/L	24hr	28	Asian RTT
mnl	1039+	14045		NON		6	Carrier for telephone channels
mnl	1020	14058/83		ASC	24hr	28	Helschreiber ... China?
mnl	14075		VRO	A1A		30	Vietnam. Six code tlc
230891	1410	14117	J2K	A1A			Ltrs & figs
1209	1115	14119		F1B		3	1000Hz + A1A ltrs & figs
mnl	0820+	14120		F1B		6	500Hz shift
230891	0812+	14170	MNR	F1B	24hr	10	Moscow Nav radio 250Hz RTTY
1009+	1020+	14183/4		F1B	24hr	3	1000Hz RTTY
1209+	mnl	14203/4		F1B	24hr	6	Rmkis "QJMS QCM K"
mnl	mnl	14212		F1B	15hrs	28	1000Hz
1209	1210	14215	CAZ	A1A		13	also PTA
1509	mnl	14217/8	UMS	F1B	18hrs	21	Mos Nav radio USSR
0709	1248	18074/5		ASE		6	B/c sta prog in Chinese +18120
0208+	mnl	21031	UMS	A1A		18	
0209+	0830+	21032.5	MNR	mud		21	Not UMS dc to UMS
2508	mnl	21115	PTA	A1A		28	Was C05 mnl ltrs
0509	0450+	21135	VWV	F1B		2	250Hz ID A1A 0558 z
1209+	1000+	21448	R Mos	ASE		15	Severe distortion & Splitter

Can be resolved in F3, located at Yarnan, Armenia  
2209 2215 20840 BBC ASE??  
language lesson at 2330z 2345z transmit change sig degraded  
Reports from VKs 2GDF, 4BG, 4AUC, 4BHL, 4BXC, 4BTW, 4CAS, 5LG, 5BFF, 6RD, 6XWAM, 68WV.

Notes this month come from Col VK4AIX, who is a dedicated follower of the intruders emanating from USSR (Russia), thanks Col.

Of most importance, as they cause much strife to our operating, are 14.058-14.063MHz involving QSY hopefully caused by amateur QRM (keep it up). Suspected of being in China: 14.211.5MHz-14.215MHz, two channels of F1B (not F7B) each channel is independent of the other; normal frequency change is in September each year, possibly due to poor conditions. 14.217.5MHz, this is a true UMS station, traffic is from UMS; its procedure in CW mode is as in combined operations in WWII. 21.031.5, Moscow Naval Radio with traffic to UUMS in CW, F1B various shifts (RTTY), but 250Hz most used. Transmissions have a lot of RYs. 21.325.5/21.328MHz; "next" of three R7Bs, NII ID R7B used extensively by USSR naval shore stations. Weather (WX) fax stations are on the increase, conditions again I suspect; drop speed around 120rpm, heard on 21.344.5/21.347.5MHz, no ID. Note .5 in frequency, point to navigational transmissions, most are on air about 18 hours, 60 percent of that time with traffic. I hope this will enlighten some of our observers that it's worthwhile keeping a copy of logged stations, and, referring each time, a dossier can be built up. It will come in very handy for DoTC, The Radio Society of Sri Lanka has joined "The System". 73, VK4KAL

MF

## KNUTSHELL KNOWLEDGE

GRAHAM THORNTON VK3TV

A brief overview of what other magazines have to say. The information given below has been supplied to the WIA free of charge by Thornton Publishing. Your divisional library may have copies of the references quoted.

### Amplifiers

#### All-Purpose Wideband Amplifier.

Andrew Pierson, EA vol 53 No 11 Nov 1991 pp 122 - 123, 136. 11 oct. A design is given for a wide band amplifier within 3dB from 5Hz to 32MHz. The output swing is 1.8V p-p into 75 . Input impedance is 1M .

#### Power Amplifiers.

Peter Phillips, EA vol 53 No 11 Nov 1991 pp 56-61, 103. 11 octs, cmp, diag, pcb and photos. A general dissertation on the design of audio power amplifiers is given. A specific design is presented for a class AB amplifier suitable for an 8 speaker, requiring 190 mV p-p for full output.

### Antennas

#### Magnetic

The Square Pancake Antenna. Ken M

Doolittle W2SMR, 73 issue #372 Sept 1991 pp 18, 20. 11 diag and photos. A seven-turn small loop is described which is suitable for indoor use. It covers 80 to 20m. Taps on the loop provide matching for different bands and for extremes of the same band.

#### Marconi

Dual-Band Vertical. David F Curry WD4PLI, 73 issue #372 Sept 1991 pp 38, 40-42, 44. 11 octs, diag and photo. An antenna with capacity top hat is designed for both 160 and 1750m bands. The antenna is insulated from ground by mounting on a bottle. A varimeter circuit is included.

#### Mechanical Details

A Limited-Space Dipole Support. Al Dion WIDWXX, QST vol LXXV No 9 Sept 1991 pp 22 - 23. PVC pipe and fittings are the basis for a cruciform structure, on the upper portion of which an inverted vee is mounted. The lower leg drops into a TV mast or PVC pipe. A specific design is given for 10m, but it can be scaled for other bands.

Rotating Tower Systems - Rohn 25 Rotation system. (Product Review) James W (Rus) Healy NJ2L, QST vol LXXV No 9

Sept 1991 pp 35-37. 11 photos. An evaluation is given for this system, which rotates the entire tower instead of an individual beam.

#### Miscellaneous

A Clothesline Dipole. Ig J Galgan WA2VIA, QST vol LXXV No 9 Sept 1991 p 32. 11 diag. A 15m dipole is attached to a continuous external clothesline, solving a space problem for an apartment dweller.

The L-O-N-G Long Wire. Stan Gibilisco W1GV, 73 issue #372 Sept 1991 pp 46, 50-51. 11 diag. The erection of an 880 foot long wire antenna is described. The difficulties of erection and results obtained are discussed.

#### Multiband

Carolina Beam. (Product Review) Bill Clarke WA4BLC, 73 issue #372 Sept 1991 pp 34, 36. 11 diag and graphs. A controlled feeder radiation Windom type antenna is reviewed. Its frequency response extends from 10 to 80m. Polar azimuth and elevation plots are presented.

Economical Mobile HF Antenna. John Portune AA6NG, 73 issue #372 Sept 1991 pp 26, 28. 11 oct, diag and photos. A modification is described to convert a Radio Shack 21-908A Trunk Lid Mobile CB antenna to HF operation from 10 to 40m. A different loading/matching coil is required for each band.

#### Product Review

The Outbacker All-Band HF Mobile



**Antenna.** David Cassidy N1GPH, 73 issue #372 Sept 1991 pp 12, 14. 11 photos. A review is given of this multiband antenna after a 12 month road test.

## VITE/VITE

**More on the Glass-Mounted 2-Meter Mobile Antenna.** Bill English N6TIW, QST (Technical Correspondence) vol LXXV No 9 Sept 1991 pp 41 - 42. 11 diag. A pair of wire radials is used when this antenna is installed on a vehicle which does not have a metal roof.

## Yagi

**Indoor 10 Meter Beam.** Jacquelyn J McElthorn N9CAP, 73 issue #372 Sept 1991 pp 24 - 25. 11 diag and graph. An indoor two element Yagi is described, which is constructed of coaxial cable. A coaxial balun is incorporated as part of the antenna. 5-6 dBd gain is claimed.

## Audio

**Simple Low Cost 'Karaoke' Adaptor.** Rob Evans, EA vol 53 No 11 Nov 1991 pp 82-85. 11 cct, cmp, diag, pcb and photos. A differential amplifier eliminates lead singer's voice from stereo recording. A microphone input is mixed with the residual music, to allow voice substitution.

**Sound Effects Generator.** Ben Buxton, EA vol 53 No 10 Oct 1991 p 67. 11 cct. Two 555 timers and a decade counter are combined to produce a ten-note musical sequence.

## Computers

**Computer Interface.** Greg Smith, EA vol 53 No 11 Nov 1991 p 72. 11 cct. An I/O data device which uses the computer parallel port to communicate.

## Electronic Devices

### Automotive

**Budget Car Alarm Mk2.** Rob Evans, EA vol 53 No 10 Oct 1991 pp 58 - 61. 11 ccts, cmp and photos. An improved version of an earlier design is described. Both exit and trigger delays are incorporated. The device senses any change in battery voltage caused when loads as small as the interior dome lamp are activated. A detailed description of the 555 timer is also given. The alarm is available in kit form from Dick Smith Electronics cat K-4310 price Aust\$32.95.

### Miscellaneous

**A Simple Touch Light.** Peter Murtagh, EA vol 53 No 11 Nov 1991 pp 93 - 95. 11 cct, cmp, pcb and photos. A touch sensitive toggle switch operates three LEDs. A discrete transistor flip flop is used.

**Fluoro Light Wand.** Peter Phillips, EA vol 53 No 11 Nov 1991 pp 90 - 92. 11 ccts, diag and photos. A hand held 18W fluorescent light is described, which is powered by six NiCads and an inverter. A kit is available from Oatley Electronics, PO Box 89, Oatley West, NSW 2223. Price Aust\$ 27 posted.

**Mini Night Viewer.** Bruno Janz and Peter Phillips, EA vol 53 No 10 Oct 1991 pp 78

- 82. 11 cct, cmp, diag and photos. A design is presented for an infra-red hand held image converter. This enables images to be viewed in very low light levels, such as starlight. A kit is available from Oatley Electronics, PO Box 89, Oatley West, NSW 2223, Australia, price Aust\$299.

**Quiz Game.** David Pickering, EA vol 53 No 11 Nov 1991 p 73. 11 cct. A circuit is given which provides an individual push button and light for a number of contestants. First button to be pressed operates a communal buzzer and excludes other buttons. A reset button is operated by the computer.

## Timers

**Automatic Light Switching.** A Lyons, EA vol 53 No 10 Oct 1991 p 56. 11 cct. A circuit is presented which switches on exterior lights when the ambient light reaches a low intensity. The lights then remain on for a pre-set period adjustable from 2 to 7 hours.

## Narrow Band Modes

### Decoders

**Improved HF Weather Facsimile Programs.** Ben Vester K3BC, QST (Technical Correspondence) vol LXXV No 9 Sept 1991 pp 40 - 41. 11 cct and photos. A description is given of an up amp clipper which provides square wave output to a computer serial port. High resolution software, written in assembly language is available from the author.

**S-VGA, VGA/EGA Fax Pice for Listening Post II.** Jim Rowe VK2ZLO, EA vol 53 No 10 Oct 1991 pp 44 - 45. 11 graph. A description of an improved version of Listening Post II is given, with better resolution. The kit is available from High Tech Tasmania, 39 Pillinger Drive, Fern Tree, Tasmania 7054, Australia, price Aust\$63 including software.

### Hardware

**PTC - The PACTOR Controller.** Martin Clas DLIZAM and Peter Mack DL3FCJ, QEX #116 Oct 1991 pp 7 - 11. 11 ccts and photos. A complete circuit is described for a PACTOR controller. An 8MHz CMOS version of the Z80 is used as the microprocessor. A series of LEDs indicate the system condition. AMTOR and RTTY can be used; the data can be transmitted in the form of Huffman code or ASCII. A choice of FSK or AFSK is available.

### Miscellaneous

**PACTOR - Radioteletype with Memory ARQ and Data Compression.** Hans-Peter Helfert DL6MAA and Ulrich Strate KF4KV, QEX #116 Oct 1991 pp 3 - 6. 11 diag and graph. A description is given of a new system which combines the benefits of AMTOR and packet. Each packet consists of a header, data, status indicator and check code. A summing technique (ARQ - Automatic Repeat reQuest) eliminates noise from repeated transmissions. The baud rate automatically changes from 100 to 200, depending on transmission path conditions. Data compression uses the Huffman code in such a way that the

most frequently used characters require the least time for transmission.

## Power Supplies

### Batteries and Cells

**Longer Life for NiCads - 1.** James Moxham, EA vol 53 No 10 Oct 1991 pp 30 - 32. 11 ccts, diag and graph. A general dissertation on the technology of NiCads is given, including the fundamental chemical reactions. Permissible charge and discharge rates are discussed. Techniques and precautions are given to extend useful cell life.

**Quantum Ham Battery.** (Product Review) David Cassidy N1GPH, 73 issue #372 Sept 1991 p 22. 11 photo. A review is given of this 12V 2.1Ah sealed lead-acid battery, which is suitable for extended operation of hand-helds.

### Battery Chargers

**Constant Current Charger.** Ranjit Singh, EA vol 53 No 10 Oct 1991 p 57. 11 cct. A two transistor circuit is used for constant current battery charging. Formulas are given to adjust the charging current.

### Series Regulated

**Low-dropout Voltage Regulator.** H F Nisank, EA vol 53 No 10 Oct 1991 p 57. 11 cct. A series transistor and an LM317 are combined in such a way that the input/output voltage differential may be as low as 0.1V.

**Variations on the 18V/1A Benchtop Power Supply.** Rob Evans, EA vol 53 No 10 Oct 1991 pp 64 - 66, 68, 72. 11 ccts, diag, graph and photos. A laboratory power supply is described which can be built to give either up to 18V output at 2A, or up to 30V at 1A.

## Receivers

### Accessories

**Antenna Tuner and RF Preamp.** Jim Rowe, EA vol 53 No 11 Nov 1991 pp 74 - 81. 11 cct, cmp, diag, pcb and photos. A solid state pre-amplifier and antenna tuner is designed to operate over the range of 500 kHz to 30 Mhz, improving receiver performance. Varactor tuning is used.

### Product Review

**AORAR5500 Scanning Receiver.** Kirk Kleinschmidt NT0Z, QST vol LXXV No 9 Sept 1991 pp 33 - 35. 11 photo. A review of this equipment is presented, complete with measurements.

## Technology

**Automotive Engine Control - 1.** Tony Mercer, EA vol 53 No 11 Nov 1991 pp 32 - 35, 99. 11 ccts, diags, graphs and photo. A review is given of modern techniques for electronic carburetion and ignition in motor vehicles.

**What Your Frequency Display Really Tells You (2).** David Newkirk WJ1Z, QST vol LXXV No 9 Sept 1991 pp 26 - 30. 11 diag, graph & photos. A discussion of various methods adopted for display of frequency is given. Accuracy is distinguished from precision.

**Our Evolving Network of Communications** - 1. Robert Owen, EA vol 53 No 11 Nov 1991 pp 28 - 31. il diag, graphs and photos. An overview is given of Integrated Services Digital Network (ISDN). A/D conversion and PCM are discussed, together with X.25 protocol for packet transmission.

## Test Equipment

### Miscellaneous

**'Lightning Meter' for SWLs.** Alex Eades, EA vol 53 No 10 Oct 1991 p 56. il oct. A simple instrument is described which measures the relative intensity of lightning discharges; time differences can determine distances.

### Probes

**Poor Man's Logic Probe.** Paul Fitzgerald, EA vol 53 No 11 Nov 1991 p 73. il oct. A

simple probe is presented which indicates a high or low state by the illumination of an appropriate LED.

## Transceivers

### Home Brew

**A High-Performance Easy-to-Build 433 MHz Transceiver (2).** Ed Krome KA9LNV, QST vol 1 LXXV No 9 Sept 1991 pp 18 - 21. il oct and photos. The transceiver alignment is considered in this part. The 10W power amplifier is discussed. This is designed around a Toshiba S-AU4 linear 'brick'. An optional 70cm band pass filter is also described as a sidebar.

### Glossary of Abbreviations

il The article contains illustrations, a list of which follows.

oct A circuit diagram

cmp A component layout drawing

EA Electronics Australia

diag A mechanical drawing

pcb A master drawing from which printed circuits may be produced

QSTVE QST Canada

RadCom Radio Communication

RadZS Radio ZS

73 73 Amateur Radio Today

The above items are reproduced from *Amateur Radio Technical Abstracts* Volume 1 1991 ISSN 1036-9025 - to be published.

## DIVISIONAL NOTES

### VK2 NOTES

#### TM MILLS VK2ZTM

Another year almost gone. May 1, on behalf of the Council and office bearers, wish all members, wherever you may be, the compliments of the festive season and may 1992 be an improved year for all.

Over the holiday break the Divisional Office will be closed for personal visits and the dates will be given on the VK2WI broadcast. Mail will be cleared, PO Box 1066, Parramatta 2124. The fax will be on line (02) 633 1525, and the phone answering machine on (02) 689 2417. The last live broadcast from VK2WI will be on Sunday, 22 December. The first for 1992 will be on Sunday, 12 January. On 29 December and 5 January there will be a morning transmission with mainly pre-recorded material. There will not be any major evening segment, other than the tape being played via the Gladesville ATV segment on VK2TVG on Channel 35 at 7.15pm for those in the of the Sydney transmission.

There are almost 50 clubs and groups in VK2 affiliated with the Division. As part of the Technical and Historical tape which precedes the VK2WI news, it is planned to include a slot for a thumbnail sketch from each group in turn. It can last up to 10 minutes and be submitted by either typed copy or cassette tape. The contents should cover the origin of the club/group, present activities and future aims, whether you conduct classes, operate repeaters, meeting details, membership size and the area or region served, if you conduct field days, contests or awards. In fact, it is to record your history before it is lost or forgotten.

This lack of maintained history was brought home in the Division recently, when some details were sought about the early and subsequent development of Dural. There are some

brief details in these columns of AR and in some bulletins of the day. There are, however, gaps with minute books and other official records because of cleanups to get rid of the "old" rubbish. To try to reduce some of these gaps, we would welcome any copies which previous office bearers may have tucked away. Minutes, newsletters, photos and anything which relates to the development of Dural and Atchison Street properties. If you can help, please contact the Divisional Office. In fact, anything which relates to the history of Amateur Radio should be checked before it's tossed!

Looking for a Christmas gift or need to drop a hint? The Divisional Bookshop has most of the books listed in this edition of *Amateur Radio*. Call in or contact the office for details.

### New Members

These members joined the NSW Division during October, and a warm welcome is extended to them.

H	Bayraktar	Assoc	Laford Park
H	Brande	VICLUB	Wahroonga
P	Britton	Assoc	Manly
P	Chapple	VIC2CPK	St Marys
E	Clitick	VIC2EGC	Murrumbidgee
P	Collins	Assoc	Rozelle
N	Dellich	VIC2ZCC	Port Kembla
B	Edmonds	Assoc	Woodpark
P	J. Field	Assoc	Miranda
L	Gay	Assoc	Vicentia
P	Hughes	VIC2FVQ	Gladesville
W	Hewes	VIC2TRY	Abbotsford
S	McGarry	Assoc	Abbotsford
S	McGarry	VIC2LSM	Landersley
W	Paterson	VIC2LWP	Wagga Wagga
J	Pollack	Assoc	Langston
G	Ryan	Assoc	Ryegate
J	Schwenberg	Assoc	Castle

A further note to repeater groups. Check the details which appear in the callbook. Are there any corrections required? Send these to the State Repeater Co-ordinator early this month, so the data issue of AR which comes out in February is up to date. Any group interested in setting up a 6m beacon in the

50MHz window should register interest with the SRC. It will be on a shared frequency. Much of VK2 has now reached saturation with 2m repeater allocation. It is no longer practical to allocate a channel which does not overlap with another service area. If new systems are required, they will have to adjust coverage and accept co-channel sharing. There is still plenty of space for systems on 70cm, so why not consider this band?

See you in '92

### VK3 NOTES

#### BARRY WILTON VK3XV

It is quite some time since VK3 notes appeared in print as we simply have not been able to obtain the services of a suitable "scribe" on a regular basis; however, it is to be hoped the situation will be rectified in 1992.

A lot has happened during the past year, including the purchase of the new property in Ashburton and the setting up of our new office. No longer do we have to pay rent, and the acquisition of the new premises will provide a substantial and secure asset base for the Division in the future.

The Division is in a sound financial position at this time as the result of much hard work and forward planning. However, we must not become complacent, and need to be vigilant and recognise change in the hobby and the needs of today's members.

History shows that the Victorian Division has, over the years, been financially unstable, with periods of prosperity and then, for various reasons, it has undergone a process of decline and suffered substantial losses.

It is a matter of record that when the going is tough, members are generally unconcerned, and the destiny of the Division is left to a handful of hard-working and dedicated people; but, when we are "riding high" there always seems to be an influx of interested members with a multitude of suggestions and new ideas.

More than anything, the Division needs the participation of members with enthusiasm and ideas, and who are genuinely prepared to work to achieve their goals, not simply put forward suggestions and expect them to be implemented by others.

When the Division was in the doldrums, member interest in the administration of its affairs was minimal and presented a problem in terms of human resources. But, now we are financially secure and administratively responsible, another problem has surfaced.

There may be groups of amateurs or organisations which believe they should have more input into the policies and financial management of the Division, and whilst the benefit of the hobby in general may well be their prime motivation for this thinking, it may also be that they desire to further their own personal ambitions and secure a benefit for the group they represent. This may well be to the detriment of the Division and the members as a whole.

If history is not to be repeated, it is advisable to ensure the members' representatives charged with the responsibility of managing the affairs of the Division are persons preferably not aligned with any specific group or organisation which may benefit, either directly or indirectly, by their participation in the decision-making process.

The program for 1992 is one of challenge, and will see a considerable upgrading of member services — the first of which will be the regular opening of our new premises for "disposals" sales on Saturday or Sunday.

Nineteen-ninety-two will see the commencement of a new era of repeater linking through AUSSAT, and further linking of the Sunday Broadcast in country areas.

There is rapidly increasing demand for assistance to members experiencing interference problems, especially in the area of Telecom equipment which suffers from RFI. We expect to be able to provide some positive help in the new year.

Operating costs of the Division have risen during the year, and our income derived from investment capital has been considerably reduced by the property purchase and falling interest rates. The economic recession, which is particularly bad in Victoria and affecting many members, has greatly influenced Council's decision regarding fees for 1992.

Good financial management practice dictates that we should budget to increase our invested capital annually by an amount at least equal to the rate of inflation. To achieve this the Divisional component of the subscription would need to be increased by \$5.50. However, in view of the financial hardship being experienced by many members, and having regard to past profits, there will be a fee increase of only \$1.25 in the Divisional component for 1992.

The Divisional Office will be closed during the Christmas/New Year holiday period, as

has been the practice in recent years. The last day of business will be Thursday, 19 December, and we will re-open on Thursday, 6 February 1992.

## Nominations for Council

Nominations for the 1992/93 Council will close at 3pm on Friday, 17 January 1992. Nominations will be accepted only on forms available from the Secretary. Nomination forms must be obtained prior to close of business on Thursday, 19 December 1991. Nominations may be returned by ordinary mail to the office, and will be processed during the holiday period.

## Membership Applications

These are continuing to flow in at a healthy rate, and as a number of applications were received in January last year when the office was closed, arrangement has been made for all new member applications to be processed during the holiday period.

Wishing all members a very Merry Christmas and the continued enjoyment of amateur radio in 1992. ar

5/8 WAVE

JENNY WARRINGTON VKSANW

I'm sitting here, on a very wet Adelaide Grand Prix race day, thinking how ironic it is that I have just spent six weeks in England, and had only one afternoon of rain in all that time! The main focus of the trip was my mother's 80th birthday but, along with my daughter, Wendy, I managed to catch up with a lot of friends and relatives, most of whom I had not seen in 27 years. We also managed two nights in ZL on the way over and two weeks in the USA on the way home, staying with a friend. I would like to be able to tell you of my vast amateur experiences whilst abroad, but you'll have to make do with the truth! Although I spoke to several amateurs on the phone (Kathy ZL2ADK, Shirley GM4LUS, Sheila G3HCQ and Nigel G4JFF (the OM of Angie G0CCI), I actually met only three face to face. Two of those were ZL YLs Alma ZL1WA and Celia ZL1ALK (I'll tell you about that another time, in the ALARA column). The other was John G8JBK, with whom I grew up in Essex (suffice to say that more time was spent reminiscing than discussing amateur radio, though it did get a mention).

I would like to thank Rowland VK5OU for taking over in my absence. You did such an excellent job, I thought I might be able to retire; but I have a sneaky feeling that YL Pam wouldn't be very happy about that.

My first amateur activity on my return was the Old Timers' Lunch at the Marion Hotel on 29 October. As usual, a good time was had by all, but it is always sad to hear of those who

became Silent Keys during the year, or who are now too sick to attend. We were pleased that George VK5RX and Thelma Luxon were able to join us after their serious accident, when a train they were boarding in January started to move off. The door prizes were won by the following: Rex Richards VK5DO, Murray Rogers VK5HH, Murray Nicholson VK5YN and Bronte Nitschke VK5KV.

If you would like to attend next year, the date will be Tuesday, 27 October, and if the wives of any of the OMs would also like to attend, we would be only too pleased to have you join the group of ladies who already make it an annual event.

As the September meeting focused on Jota and Aussat, the October meeting was the Display of Members' Equipment night. Unfortunately, only three members bothered to enter this year. (I don't know how many brought things in September). Keith Gooley VK5BGZ showed and described his microprocessor-controlled frequency counter, and won the ICS Award. Mark VK5AVQ brought along his auto-ranging digital voltmeter and a two-tone oscillator. Clarry VK5KL described his 50MHz pre-amp. As none of the above is a beginner in the homebrew "stakes", it was decided not to present the Miller Award this year, as it is given particularly as an encouragement award to newcomers. Our thanks to all who participated.

While I was away, the Yorke Peninsula Repeater Group has been formed, its main object being to build and locate a repeater at Lochiel. On Saturday, 26 October, under the leadership of Paul Cooper VK5AJL, they held a fund-raising day — a most successful one by all accounts. Norm VK5ZAH gave a talk on making printed circuit boards, and later, Grant VK5ZWI and Graham VK5SU gave a talk on packet radio (and how to get started in it). Steve VK5ZJN had a "gear testing service" to test any pre-loved gear that had been bought. The organisers were very grateful to Dick Smith Electronics for attending, and also to the WIA boys who took ESC & Pubs (Equipment Supply Committee & Publications) and, last but not least, a big thank you from everyone to the ladies who provided the wonderful barbecue. Seems I missed an excellent day!

## Diary Dates

Christmas Meeting — Tuesday, 10 December, Woodville Community Hall, 64c Woodville Rd, Woodville (between Port Rd and Town Hall). Meeting starts 8pm, bring your partner and a plate of supper.

The speaker will be Bob Major from the Department of Mines, who you may remember, spoke on Chernobyl earlier in the year. This time he will speak on the volcanoes of Italy, but he assures me it is more a travelogue than a geology lesson. I hope to see you there. I would like to wish everyone a happy and safe Christmas and new year.

ar

## VK6 NOTES

HARRY ATKINSON VK6WZ

Attendance was down at Hamfest last month, but the NCRG says business (amateur and commercial) was good. Displays were mounted by about half a dozen electronics firms in addition to amateur displays of ATV, digital modes, club and institute exhibits etc. NCRG officials were delighted with the generosity of trade donors of prizes for the raffles — totalling something like \$3000 in retail value. The car park flea market had 21 spaces sold.

WA chapter of WICEN is to update its equipment if an application to the Lotteries Commission succeeds. If the \$3000 is forthcoming, it will be matched dollar-for-dollar by the WIA, allowing WICEN to buy new HF, VHF and UHF gear and return the present equipment to its owners. The final "shopping list" will be determined by the outcome of the current local and federal WICEN reviews.

Season's greetings to all from the president and council of the WA Division.

AR

## A Call to all Holders of a Novice Licence

Now you have joined the ranks of amateur radio, why not extend your activities?

The Wireless Institute of Australia (N.S.W. Division) conducts a Bridging Correspondence Course for the AOCIP and LAOCIP Examinations.

Throughout the Course, your papers are checked and commented upon to lead you to a successful conclusion.

For further details write to

The Course Supervisor

WIA

PO Box 1066

Parramatta NSW 2124

(109 Wigram Street, Parramatta)

Phone (02) 689 2417

11am to 2pm Monday to Friday  
7 to 9pm Wednesday

## CLUB CORNER

### Radio Amateurs Old Timers Club

At the October luncheon in Melbourne, the committee election resulted as follows:

President: Alex Stewart VK3BMS, phone (03) 579 0006. Secretary/treasurer: Harold Hepburn VK3APQ, phone (03) 596 2414. Publicity/broadcast: Allan Doble VK3AMD, phone (03) 570 4610. Past president: Ken Fincott VK3AFJ. Members: Ken Seddon VK3ACS, John Tutton VK3ZC, John Fulagher VK3AVY.

The broadcast on the first Monday of each month except January will continue at the times and frequencies shown until the return to standard times in April.

145.700MHz FM and 7.060MHz LSB 2300

Zulu

14.150MHz USB beaming north from Melbourne 2400 Zulu

14.150MHz USB beaming west from Melbourne 0100 Zulu

Contributions of interesting items for inclusion in the broadcast and/or the OTN journal will be very welcome indeed. The next issue of OTN is due in March, so articles are needed now!

And, for those members who meant to send along their \$10 subscription a couple of months ago, please accept a gentle reminder. Secretary Harold would be delighted to hear from you.

73 for now and all the best for Christmas and the coming year.

ALLAN DOBLE VK3AMD

at

## OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION BUT MUST BE LESS THAN 300 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS.

### Bitter Experience

This letter has been written out of sheer frustration and to forewarn others of the dangers of paying for equipment in advance, whether it be for radio or any other item.

Over the past number of months in a rival magazine a few of you may have noticed articles such as "Captain Communications are Moving" ... "Captain Faces Court Martial" and "Captain Apologises". Well, as far as the moving goes, he certainly did that, and, as for the court martial, I would have given Breaker Morant a better chance.

I don't know of anyone who was apologised to, other than via the other mag. The apology itself was worthless, as the firm is now in receivership.

Since 10 July 1991 when moneys were paid to Captain Comms who, for some eight weeks before that, had promised delivery of a couple of 2m radios, it has been nothing but an uphill struggle to get any truth from them. We paid this money in full as requested, to expedite delivery. Perhaps it was gullible to do so, but we had waited two months already.

The staff of Captain Comms not only conned others as well as myself into handing over money and equipment which has not been returned to its owners, but later requested in the other mag that people write to them as I myself had done but, unfortunately, to no avail.

The lesson to be learned here is not to pay in advance for any equipment. If it is not on the store shelf when you want it, wait until it is or just go to another supplier, no matter what other freebies you may be offered. Dis-

honest people will always be around to take your money and run!

JIM ZENNER VK2LJZ

PO Box 949

BOWRAL 2576

### Who Built Your Tower?

Could you please inform your readers that it has been brought to my attention recently that some amateurs have acquired what they thought was a Nally radio tower, when in fact it was not.

The Nally is a free-standing two-section wind-up tilt-over tower 13.7m (42 feet) high.

If you are going to purchase a second-hand tower, I would be pleased to help you to verify whether or not it's a Nally tower.

You can contact me on phone 018 388 959.

A D ROWE VK3KMN

NALLY RADIO TOWERS

48-48 ELLIOTT RD

DANDENONG 3175

### JOTA Thank You

I am writing through AR to all readers who were operators at the stations on the weekend of 19-20 October 1991 for JOTA (Jamboree on the Air). A big thank you and well done to all who helped at these stations, also to AUSSAT for use of the satellite links on two metres.

Some operators had girls visit their own radio shacks, some created instant large stations in Guide and Scout halls and at camp sites; still others came along as help and support to operate these stations.

Approximately 46 stations in which Guides participated operated throughout Victoria. To all these people I would like to say many thanks for your time, help and support without which many girls could not have participated in this weekend.

In this modern world with so many other electronic machines available, it is gratifying to see so many Girl Guides interested in radio. They are becoming more confident in front of a microphone, and this all helps considerably with extending their personal self-confidence, which is a part of our extensive program.

To all operators and participants on behalf of the Girl Guides of Victoria, I would thank you very much for your help and participation.

ANNE WATSON

RADIO ACTIVITIES CO-ORDINATOR  
GIRL GUIDES ASSOCIATION OF VICTORIA

## A Kiwi in VK8

In September this year I had the pleasure of travelling by road some 8000km from Brisbane to Darwin by a most roundabout route. An experience not to be forgotten. Some of this route was with a University Continuing Education Program and some in a camper-

What wonderful — and different — birdlife you have in both wet and dry areas. Some of the birds we soon began to recognise, but I wonder if some of your readers could please help identify ones we could not see, but heard away in the distance when all was quiet, usually mid-afternoons and toward evening in isolated areas.

The call is like the sound of a flute or recorder, monotone, and about "E" or "F". I called it the "Morse Code" bird, for that's just what it sounded like — Morse Code. On two occasions, near Elliot and Wallara, I jotted down the "call" for a few moments.

Most of my copy was like this: ..... etc. Not much sense; what did 9 T 9 mean? Kilometres from — or to?

Then I noticed that sections of the call, over a period of time as I recorded, became recognisable, and a "message" soon became clear — the bird was learning to spell! From my jottings I "unscrambled" this message: ..... ? ..... ?? ..... ?? ..... ?

HI? ON?? TEN TM?? HAM, RIT?? O? TRK. (The ?s denote unrecognisable elements of the message).

Decoded, it could read:

"Hi, on to Elliot on time, Ham, right on track!"

Thus assured of my timetable and map-reading ability, I was soon at the camping ground in Elliot ... and into the pool.

Best wishes, and I like your "Tidy Town" idea.

HAROLD B MAUNDER ZL3ABW  
23 BUCHANANS RD  
CHRISTCHURCH 4 NZ

## Titanic Radio Calls

The article by Frank Patrick VK3FJP and Q Foeter (AR Oct '91) made great reading and revealed much about the early days.

Those of us with "black boxes", so easy to run — unlike old-time gear — (see page 7 of that issue re spark transmitters!) bear a heavy debt to the early operators for their grit and determination.

I must defend Captain Arthur Rostron of the Cunard liner "Carpathia" and its wireless operator and passengers who gave such sterling assistance in the "Titanic" disaster.

The ship which did not answer the "Titanic's" distress calls was probably the Leyland liner "Californian" (although this is still denied by some). She was stationary in ice some 10 to 19 miles away, and her radio room had been shut down shortly before the "Titanic's" distress calls. She later ignored Morse lamp signals and rockets.

The "Carpathia", 58 miles away and trav-

elling the other way, changed course immediately upon hearing the "Titanic". One ironic fact, the "Californian" had sent urgent ice warnings to the "Titanic", but was ignored by radio operator Phillips, busy with private messages to Cape Race.

The "Titanic" struck the iceberg at 11.40pm, Sunday, 14 April 1912. At 12.05am, Captain Smith gave the order to radio operators, Jack Phillips and Harold Bride, to commence sending the distress signal.

In 1912 not many ships had wireless, and the two operators, employed by the British Marconi Company, were not part of the established shipboard chain of command. Messages to the bridge followed no routine procedure.

The original distress signal was "CQD", but "SOS" was also known, and the "Titanic" began sending both signals, one of the first SOS calls ever made from a ship in distress.

Several of these messages still exist; one, received about 1am, reads "SOS SOS CQD CQD we are sinking fast — passengers are being put into lifeboats".

Subsequently, regulations regarding radio watch were tightened up, although not specifically recommended by the British Board of Trade Enquiry.

## Morseword No 57

Solution page 64

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

### Across:

- Severe
- Namely (Latin)
- Dirty mark
- Bottom
- Difficult situation
- Fairy's tool
- in (betray)
- Ins and —
- Inter — (among others)
- Electronic sound

### Down:

- Publicity feat
- Warble
- Satisfied
- Baker
- Statsons
- Picture
- Gawk
- Corrosion
- Ukrainian city
- Rescue

Thanks, Frank, for stirring up a bit of interest in our history, and especially that "Night to Remember".

IAN C GRIGGS VK2WR  
88 EXCELSIOR AVE  
CASTLE HILL 2154

## Monopole, Not Unipole

In the October '91 edition of AR there was an article on a "unipole" antenna by Des Greenham VK3CO. The correct name for this antenna is a "quarter wave folded monopole". The term "unipole" is an old and out-of-favour term for an isotropic radiator. The term "monopole" has been in use in antenna engineering for some time, and I quote from the IEEE Standard Dictionary of Electrical & Electronics Terms.

**monopole** Any one of a class of antennas constructed above an imaging plane to produce a radiatio pattern approximating that of an electric dipole in the half space above the imaging plane.

If you substitute imaging plane with ground plane or radials, the above is a good description of VK3CO's antenna. By using the word "class", the definition avoids any specifics such as construction details or electrical dimensions.

To add a little linguistics to the argument, unipole is out of place. The prefixes 'mono-' and 'di-' come from the Greek, while 'uni-' and 'bi-' come from the Latin. So we have monopole and dipole antenna on one hand with unipolar and bipolar transistors on the other.

You see, I don't like loose ends; that is why I built one myself. I think I will use 10mm

tubing for the driven element, as this will give a broader bandwidth.

PETER O'CONNOR VK4KIP  
10 SINCLAIR ST  
MOOROOKA 4105

## A One-Man Team!

I cannot contain my disgust at the complete lack of consideration given the faceless other two team members who participated in the Amateur Radio Operators for Relief Work in China. P55 AR October 1991.

Certainly this advertisement appeared in the Hamads section of our magazine, but surely the commercial enterprise responsible could at least have had the courtesy to include the names of the other team members involved!

I am aware of one other team member, but do not know him personally, and I have no other complaint against the firm involved, therefore I have no ulterior motives in commenting on this matter. To the individual/s responsible for preparing this advertisement perhaps a revision of the meaning of the word team, and a study of the basics of common courtesy would not go astray.

ALAN CHRISTOPHER VK4VE  
PO BOX 686  
REDCLIFFE 4020

## Re-United by Radio

They quite often say that wonders never seem to cease to happen and that probably also goes for such things as miracles!!

This "miracle" occurred a few months ago, but it took me a while to get around to relating the story to "Over to You".

First of all, I must congratulate *Amateur Radio* journal, which is more or less responsible for the result of my segment on Morse Code published in "Over to You" back in January.

Since being discharged from the army and also gaining my AOCIP and licence about a year ago, I was determined to search the airwaves to make a contact with anyone of the members of my old unit, the 36 W/T Section.

I had almost given up the search when I received a letter from my former army O/C, who by chance happened to read my segment in AR. So my search ended after all these years of wondering whatever happened to all the members of that group. Thanks Ian Paterson VK2CJP and also Aub Miller VK2EEX for removing that cloud that has been hanging over my head for all these years! The equipment in those days was very heavy to handle, and had quite a few problems, but was a success in the long term.

BERT HARMER VK5AUS  
14 SCOTT ST  
SEPTON PARK 5083

PS: Members of the 36 Wireless Task Section:

Ian Paterson, Aub Miller, Bert Harmer, D Warren, M Burt, M Knowles, T Maddern, G Crook, R Grove, T Jacobson, D Matherson, V Bayley, K Dawe, K Farr, N Kingsford, P Mahony, V O'Dwyers, S Vickery (reunions are being held for 35-36 37 W/T Sections)

ar

## SILENT KEYS

DUE TO INCREASING SPACE DEMANDS OBITUARIES MUST BE NO LONGER THAN 200 WORDS

We regret to announce the recent passing of:

Mr D G	Finlayson	L70168
Mrs J	Davidge	VK2GI
Mr G	Van Ettehoven	VK2NX
Mr W	Miller	VK2CWM
Mrs Joy	Collis	VK2EBX
Mr R J	Edwards	VK3CZ
Mr Roy	Prowse	VK3XY
Mr R	Gorman	VK3YTB
Mr N	Gee	VK4BNG
Mr E	Pawson	VK4DEP
Mr L	Gardner	VK4FFG
Mr K	Hillyard	VK4VFG

## Gerrit (Gerry) van Ettehoven VK2NX, ex VK2PTE

Gerry VK2NX passed away on Saturday, 26 October 1991, aged 62. Gerry was a found-

dation member of Fisher's Ghost Amateur Radio Club and has been a very active member of the club ever since.

He served as Treasurer for several years and also conducted the 10m net, including the practice Morse transmissions preceding the SSB section of the net. He was also the Morse code instructor for the club; many an amateur operator in the district owes it to Gerry for the code section of his or her licence.

Besides his activities with Fisher's Ghost, Gerry was also a very active member of the VK2 chapter of the RNARS, being a foundation member and also treasurer of that group. He spent many a Saturday at the Naval Cadets College on Snapper Island, putting the call-sign VK2CC on air. He was returning home from Snapper Island at the time of his death.

He is survived by his widow Rita, and also his daughter Carol, son Robert and their families. Vale Gerry VK2NX.

FROM ARTHUR HARRIS AND ALL  
MEMBERS OF FISHER'S GHOST ARC

## Russell John Edwards VK3CZ

Russell Edwards died 19 October 1991, aged 66 years. He was a returned soldier of the Second World War and served at Tarakan. Russell was interested in radio from boyhood days, and qualified as a radio amateur in July 1978 with the call-sign of VK3CZ.

Russell was a qualified building surveyor and worked in that field for many years.

He will be sadly missed by his wife Jean and son Sterling and his many friends.

JACK FALGNER VK3EB

## Graeme Whitehead VK4NYE

With regret, I record the passing of my very good friend Graeme VK4NYE on 25 August 1991. He became a quadriplegic in 1976, and derived much pleasure from amateur radio. He called the activity "the great leveller" because, while on air, his disability was not a disability. Equality and participation was his favourite theme.

He was born in Richmond, Queensland, in 1940, and was always a bushman at heart. Some of his other activities were cattle and

sheep station manager, short-story writer, announcer on 4DD-FM, and he was a Lions Club member until the time of his death. He worked very hard to get a better deal for the disabled, and achieved much.

Graeme came into amateur radio in 1982, and was a founding member of the VK4 Disabled Persons Radio Club VK4BTE, which runs under the mantle of Help Handicapped Enter Life Project, of which he was also a founding member. When he could, he shared the running of VK4 Disabled Persons Net on Friday nights.

Sincere condolences to his wife Bev, his daughter, three sons and two step-daughters. He is sadly missed.

ROLEY NORGAAUD VK4AOR

## Joy Collis VK2EBX

(See also ALARA Notes, page 46)

"I like amateur radio; I really think it's fine that I'll still be a YL if I live to 99. It's a satisfying hobby; it will certainly do me, 'til they write beside my name the words 'Became a silent key'."

Joy VK2EBX could not live to 99 as she had hoped in her verse, but she was an active YL right up to the day her illness put her permanently to bed.

Joy was first licensed about 13 years ago and was very active on the HF bands. She took part in many worldwide nets and contests, and covered the walls of her radio shack with

awards. She was always a courteous operator, but was not afraid to stand up to the OMs, if she thought they were being chauvinistic.

Joy also had other talents — she wrote poetry — and in 1983 won the Bronze Swagman Award for Bush Verse.

For many years she was the VK2 State Representative and Publicity Officer for ALARA, writing the column for *Amateur Radio*. Earlier this year she was made the first Life Member of the Orange Radio Club.

Her life reflected her strong Christian faith, and last Tuesday the little church at Yeoval was packed with friends and relatives.

Joy will be sadly missed by all who knew her.

DOROTHY BISHOP VK2DDB

VK1/2 ALARA REPRESENTATIVE

## George Harvey VK3CYA

On 8 September 1991, George Harvey VK3CYA of Echuca died peacefully in the Echuca Hospital after being a quadriplegic for 27 years.

The story of George's tragic accident and his more recent involvement in amateur radio was the subject of an article in *Amateur Radio* magazine in January 1990.

George's courage and enthusiasm for life despite his handicap, was an inspiration to many people who either met him personally or spoke to him "on air".

He held regular "skeds" with many friends, and his absence will be mourned by all.

His funeral in Echuca was attended by a large group of amateurs from far afield, and to his wife Elma and their family, we extend our sincere sympathy in the loss of a great man.

DES GREENHAM VK3CO

# BOOK REVIEW

## THE ANTENNA EXPERIMENTER'S GUIDE

by Peter Dodd G3LDO

(ISBN 0-9516024-0-3)

Reviewed by Evan

Jarman VK3ANI

200 pages, 120

illustrations

Price \$20 plus \$3 p&p. Our copy came from the author, 37 The Riding, East Preston, West Sussex BN162TW. Telephone +44 903 770 804.

The humble antenna is the one item of common interest to all radio amateurs. It is the most easily constructed and its correct operation would have more bearing on overall success than any other item in the radio station. It is little wonder it is the most discussed, and written about, item of radio equipment.

Generally the antenna is built using an idea or design seen somewhere. It looked like a good idea, or the gain was just what was needed. It is constructed and then refined in an effort to improve what was built.

In an effort to improve the refining process by making it more systematic, the author of this book has collected various concepts to show how they benefit each other.

This is not a collection of designs. It shows how to measure some of the various parameters that define antenna performance; even provides designs for test equipment.

The book shows how some models for various antennas work. Computer programs are used to perfect, as far as possible, antenna performance before construction commences. This field can be very rewarding, and is devoid of many of the frustrations of building it first. It is quite amazing how changes in things like conductor size can affect performance. It doesn't show this completely — no book can.

To truly see this you need to get your hands on a computer, but it does give you an idea of what can be done.

Theoretical antenna design is touched on. A reprint of an article in *QST* on the direct drive ring radiator is a joy for those who consider mathematics to be a tool and not something to be feared of.

The measurement and design work is complemented by a chapter on masts and materials showing what is involved in constructing your creation. Just remember: the bigger they are the harder they fall, and antennas work best when they are up in the air.

The book is rounded off with a chapter of designs of experimental antennas the author has used. It was nice to see a reference to our noble Editor as one of the sources for his ideas (AR October 1990).

This is not a reference book. It is a book of ideas that are meant to be put into practice. It is for those who like to experiment and know what they are doing.

The only thing I found irksome was that some measurements are marked with units and others not. I can only assume from my reading that they are all meant to be imperial. Where the inch symbol was not used I kept defaulting to millimetre (or metric) as did others when I showed them the book.

No doubt it will please many of the older operators who are used to them, but those who use metric (which is most) assume them when there is no alternative marking.

The author obviously enjoyed writing this book. It is obvious he has spent many happy hours using the concepts he explains. For those who would like to enjoy experimenting with antennas because they understand what they are doing, this is a good book.

## ELECTRONIC WORLD DISPOSALS

## NOW OPEN

For that hard to get or unusual item, give us a call. Big range of goods and components in stock.

We are interested in purchasing surplus and disposal components.

27 The Mall,  
cnr Eastfield and Bayswater Rds  
South Croydon Vic 3136

Ph: (03) 723 2699





# WANTED — SA

● 14MHz TIP FOR HUSTLER mobile antenna. VK5BRH Hank (085) 37 0255.

6M BASE RIG; 204BA HF Yag; homebrew HF linears, beamst cases or not; Heathkit coax switch; old bug lays; tubes 3/300, 2/500, 3/5750 and ceramic sockets; Icom 720; Yaesu FT830S. "Doc" of VK5BRH Whyalla ARC (086) 45 4971 BH, (086) 45 4168 AH.

# WANTED — TAS

● ICA RTL 14 pin DIL, new or on old computer boards. Motorola MC700P or MC800P series. 3.5V supply rail. EGS MC880P, MC880P, MC884P, MC817P, MC881P, MC8818P, MC882P, MC888P, MC884P, MC825P, Cyl.9860, Fairchild MC1013P, Cyl.9869 Fairchild, MC1035, MC1026. Any help would be appreciated. Trevor VK7BT QTHR (003) 24 4288 BH, (003) 98 2118 AH, fax (003) 26 5039.

# STOLEN EQUIPMENT

Stolen from P Overton VK2OG, 32 Fuchsia Cres, Quakers Hill 2763 on 8 October 1991: One Icom IC-02AT handheld, ser 406070630.

Stolen from Fiona Carmichael, PO Box 397, Mentone 3194, May 1991: President HR2510 ser 95000177.

Stolen from Cliff Bastin VK6 Div WIA President VK6LZ, 28 October 1991: Kenwood TR2500 2m HH ser 4101224.

Stolen from Christine Bastin VK6LZL, 28 October 1991: Kenwood TR2500 2m HH ser 4030422.

Stolen from VK6ID, 25 August 1991: Kenwood TS440S ser 7031310. Two x Philips UHF CB HH, model 6XA (ch17 & 20). Two x Philips UHF CB HH, model 323 (ch17 and 20). King Air aircraft band transceiver. Realistic scanning Rx with BNC socket.



*Sally Grattidge VK4MDG gives her artistic impression of the difficulties of getting the WIA Slow Morse Transmissions correctly published in AR.*

# Hamads

Please Note: If you are advertising items for Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

\*Eight lines per issue free to all WIA members, ninth line for name and address. Commercial rates apply for non-members. Please enclose a mailing label from this magazine with your Hamad.

\*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

\*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

\*QTHR means address is correct as set out in the WIA current Call Book.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

\*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: \_\_\_\_\_


Not for publication:

☐ Miscellaneous

☐ For Sale

☐ Wanted

Name: \_\_\_\_\_ Call Sign: \_\_\_\_\_ Address: \_\_\_\_\_

## Solution to Morseword No 57 Page 59

	1	2	3	4	5	6	7	8	9	10
1	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.	.	.	.
7	.	.	.	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.	.	.	.
9	.	.	.	.	.	.	.	.	.	.
10	.	.	.	.	.	.	.	.	.	.

## HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary  
Wireless Institute of Australia  
PO Box 300  
Caulfield South, Vic 3162

I wish to obtain further information  
about the WIA.

Mr, Mrs, Miss, Ms: .....

Call Sign (if applicable): .....

Address: .....

State and Postcode: .....

### TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with strictly.

### VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

TYPESETTING: Magazine Graphics  
PO Box 72  
Caulfield Sth, 3162  
Ph: 528 1033

PRINTING: Industrial Printing  
Richmond

MAIL DISTRIBUTION: R L Polk &  
Co Pty Ltd  
PO Box 140,  
Collingwood,  
Vic. 3068  
Tel: (03) 417 5161

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

## ADVERTISERS INDEX

Amateur Radio Action .....	p 35
ATN Antennas .....	19
Dick Smith Electronics ...	37-39, IBC
Electronic World Disposals .....	61
Emtronics .....	14, 15
ICOM .....	OBC
Kenwood Electronics .....	IFC
Stewart Electronics .....	19
VHF Communications .....	27
WIA Bookshop .....	24
WIA NSW Division .....	58

### TRADE HAMADS

M Delahunty .....	62
RJ and US Imports .....	62

## WIA Slow Morse Transmissions

VK2BWI nightly at 0930 UTC on 3550 kHz

VK2RCW Continuous on 3699kHz and 144.950MHz 5wpm, 8wpm, 12wpm

VK3RCW Continuous on 144.950MHz 5wpm, 10wpm

VK4WIT Monday at 0930 UTC on 3535kHz

VK4WCH Wednesday at 0930 UTC (0830 UTC daylight saving) on 3535kHz

VK4AV Thursday at 0930 UTC on 3535kHz

VK4WIS Sunday at 0930 UTC (0830 UTC daylight saving) on 3535kHz

VK5AWI Nightly at 1030 UTC on 3550 kHz

VK6RAP Nightly at 2000 local on 146.700MHz

VK6WIA Nightly (except Saturday) at 1200 UTC on 3.555MHz

# The Tradition Continues...

## YAESU FT-990 HF ALL-MODE TRANSCEIVER

Take a quick look at the all-new FT-990 and you'll soon see the similarity to the top-of-the-line FT-1000... and for good reason. The Incredible FT-990 embodies many of the advanced features and ease of operation of the FT-1000. But in a more compact, economical package that sports several new advances in both transmitter and receiver design.

**2 YEAR WARRANTY!**



### Designed For Easy Operation

Just like the FT-1000, Yaesu have designed the FT-990 to be as easy as possible to operate. The front panel layout puts all frequently used controls right where they should be... at your fingertips. All controls are clearly labelled and the digital display provides an abundance of information in an uncluttered and easy to read format. The front panel keypad offers one-touch band selection (160m - 10m) with 2 independent VFOs per band and 90 memories that store the operating data held in both VFOs. You can't help but appreciate the large back-lit analogue meter rather than those confusing bar-graph meters found on other transceivers.

### Unique Features

- Customizable RF Speech Processor - Yaesu's unique Frequency Shifted Processor (FSP) lets you shift the IF passband of your transmitted SSB signal to provide maximum punch with your voice/microphone combination.
- Digital Audio Filtering - Razor sharp audio filtering is available for tough SSB and CW reception conditions through the use of an astounding dual digital Switched Capacitance Filter (SCF) with independently adjustable selectivity skirts.
- Packet/RTTY - Separate Interface jacks for a RTTY terminal unit and a Packet TNC are provided, while the mode selection buttons disable the mic automatically in the digital modes.

### Direct Digital Synthesis (DDS)

Two 10-bit DDS and a magnetic rotary encoder provide silky-smooth VFO tuning, pure local oscillator signals, and very fast Tx/Rx change-over... and that's very important for QSK CW and digital modes. The DDS is teamed with an extremely low-noise, high performance receiver front-end using a PIN-diode controlled push-pull RF amplifier followed by a quad-FET ring mixer. The result is a very wide receiver dynamic range from 100kHz to 30MHz. Transmitter signal purity is also enhanced, with circuit noise nearly 90dB down from the carrier.

### Convenience Features

- A highly efficient AC switch-mode power supply is built-in! It allows high duty-cycle transmission while keeping the weight way down, saving space and the added expense of external power supplies.
- An in-built Automatic Antenna Tuner with 39 memories is standard!
- Modular construction maximizes selectivity and makes servicing easy.
- Effective interference rejection is facilitated by IF shift, IF notch, IF bandwidth and SCF audio controls.
- An adjustable noise blanker, a 500Hz B/W IF crystal filter and a comprehensive, easy to read user manual are also supplied.



Sole Authorised  
Australian Distributors

**Hurry, Order Now...  
INTRODUCTORY OFFER**

Order your new FT-990 before  
Christmas and we'll give you a  
**BONUS** Yaesu MD-1 Desk Mic  
worth \$150... at no extra cost.

Ref D-3260

**\$3295**

**ORDER NOW! FIRST SHIPMENT DUE  
IN DECEMBER 1991.**



**I**com's impressive range of receivers lets you listen to more frequencies, across the band and around the world.

Starting with one of the smallest receivers ever produced, the IC-R1 covers 100kHz - 1300MHz (2 ~ 905MHz guaranteed), with AM, FM and Wide FM modes, Dual Frequency Selection and 100 memories.

The IC-R72 receives 30kHz - 30MHz (100 kHz ~ 30 MHz guaranteed) in SSB, AM and CW modes and comes with numerous impressive features, including Icom's DDS System to improve Carrier to Noise Ratio characteristics and optional FM mode.



IC-R9000

## With an Icom receiver, the world is as wide as your band

The mobile IC-R100 is packed with powerful features, and covers the 100kHz - 1800 MHz (500 kHz ~ 1800 MHz guaranteed) range in AM, FM, wide FM modes with multi-function scanning and 100 memories with 20 scan edge channels.

While the IC-R7100 covers from 25 ~ 2000 MHz in SSB, AM, FM, wide FM modes, optional TV and FM stereo adaptor, with 900 memory channels, sophisticated timer functions and multiple scan functions.

The top of the range IC-R9000 expands your listening horizons, covering 100 kHz ~ 1999.8 MHz in all modes and featuring Icom's unique CRT display, intelligent scan functions and an amazing 1000 memory channels, in a unit that delivers superb high frequency stability, even in the GHz range.

So tune in to the ones that professional listeners use, from the wide range of Icom wide band receivers.

For further information call free on (008) 338 915 or write to Reply Paid 1009 Icom Australia Pty Ltd P.O. Box 1162 Windsor Victoria 3181 Telephone (03) 529 7582 A.C.N. 006 092 575



IC-R7100



IC-R100



IC-R72



IC-R1